

Giigido (s/he speaks in Ojibwe): An Architectural Exploration of Ojibwe Language Learning in
the Atikameksheng Anishnawbek First Nation

by

Brook-Lynn Roy

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Abstract

Acknowledging the endangered state of Indigenous Languages situated in the colonial narrative of Canada, this thesis investigates the capabilities of architecture as a tool to support existing language revitalization strategies. It presents a process of knowledge gathering, recording, and interpretation that identifies key concepts inherent to language and identity. Investigating topics through a lens of actions and processes, the body of knowledge is analyzed through the act of making. As a result of first-hand material explorations and community consultations, this thesis proposes an architectural typology unique to the Atikameksheng Anishnawbek First Nation community. The proposed typology represents a spatial interpretation of the Ojibwe language, inherently criticizing the continuously imposed Western concept of education and imposed architectural designs. As a kit of parts, the proposal is fully adaptable to meet the community's needs and is intended to complement their residential expansion and language revitalization plans.

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Glossary

Aabjichganan:
(plural) Tool or utensil¹
Aabjichgan (singular)

Amendments:
A section added to a law or rule in order to change it.²

Anishinaabe (Plural, Anishnawbek and/or Anishinaabeg):
A group of Indigenous peoples, which include the Odawa, Ojibwe, Potawatomi, Oji-Cree, Mississaugas, Chippewa and Algonquin, who have lived and continue to occupy the Northeast Woodlands and Subarctic regions of North America.³

Anishinaabemowin:
The Ojibwe Language.⁴

Assimilation:
The process whereby individuals or groups of differing ethnic heritage are absorbed into the dominant culture of society. (Term used in anthropology and sociology)⁵

Badakishim:
(animate) To erect, stand a stick-like object somewhere.
Badakisidoon (inanimate)

Bagamishtigwaan:
(singular) Hammer⁶
Bagamishtigwaan (plural)

1 "Aabjichganan," Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n7297171350n>.

2 "Amendment Definition and Meaning: Collins English Dictionary," Amendment definition and meaning | Collins English Dictionary (HarperCollins Publishers Ltd), accessed March 20, 2023, <https://www.collinsdictionary.com/dictionary/english/amendment>.

3 "2. Glossary," Its Our Time, Education Toolkit (Assembly of First Nations), accessed January 17, 2023, <https://education.afn.ca/afntoolkit/web-modules/plain-talk-1-pre-contact/glossary-2/>.

4 "Anishinaabemowin (Ni): The Ojibwe People's Dictionary," anishinaabemowin (ni) | The Ojibwe People's Dictionary, accessed March 20, 2023, <https://ojibwe.lib.umn.edu/main-entry/anishinaabemowin-ni.i>

5 "Assimilation," Encyclopædia Britannica (Encyclopædia Britannica, inc.), accessed March 20, 2023, <https://www.britannica.com/topic/assimilation-society>.

6 "Bagamishtigwaan," Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n72976640691n>.

Biindisagiboojige:
Cut grooves into wood⁷

Daashkiboojigan:
(singular) Bucksaw, crosscut saw
Daashkiboojiganak (plural)⁸

Dbizhigen:
English Translation: Measure⁹

Denigrated:
To be represented in a negative light. To be belittled. To be criticized unfairly.¹⁰

Eshkan:
(singular) Chisel ¹¹
Eshknak (plural)

First Nation:
Indigenous peoples of Canada who are neither Métis nor Inuit. This term came into common usage in the 1970s to replace the term “Indian” and “Indian band”.¹²

Fluent:
When a language is spoken easily, well and quickly.¹³

Gezibizo:
(animate) Be tied up neatly, be wrapped neatly¹⁴
Gezibipide (inanimate)

Giishikonakad:
A cut off tubelike object ¹⁵

7 “Biindisagiboojige,” Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n72994052246n>

8 “Daashkiboojigan” Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n72987348960n>

9 “Dbizhigen” Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73001152468n>

10 “Denigrate Definition and Meaning: Collins English Dictionary,” Denigrate definition and meaning | Collins English Dictionary (HarperCollins Publishers Ltd), accessed March 20, 2023, <https://www.collinsdictionary.com/dictionary/english/denigrate>.

11 “Eshkan” Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73015876741n>

12 Bob Joseph, “Indigenous Peoples Terminology: Guidelines for Usage,” Indigenous Corporate Training Inc. (Indigenous Corporate Training Inc., January 4, 2023), <https://www.ictinc.ca/blog/indigenous-peoples-terminology-guidelines-for-usage>.

13 “Fluent,” Cambridge Dictionary, accessed March 20, 2023, <https://dictionary.cambridge.org/dictionary/english/fluent>.

14 “Gezibizo” Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73020157213n>

15 “Giishikonakad” Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73023679167n>

Giigido:

she/he speaks.¹⁶

Gwiinjimaa:

(animate) Put something in water to soak¹⁷

Gwiinjidoon (inanimate)

Indigenous:

Designating a people [and their culture] inhabiting a place before the arrival of settlers.¹⁸

Indigenous Peoples:

A collective name for the original peoples of North America and their descendants.¹⁹

Interpretation:

The act of explaining, reframing, or otherwise showing your own understanding of something.²⁰

Inuit:

Indigenous people in northern Canada, living mainly in Nunavut, Northwest Territories, toolMiziniboozhn northern Quebec and Labrador.²¹

Kinomaagewin:

Teachings

Mamizhwi:

(animate) Cut it out or off to take²²

Mamizhan (inanimate)

16 "Giigido (VAI): The Ojibwe People's Dictionary," giigido (vai) | The Ojibwe People's Dictionary, accessed March 20, 2023, <https://ojibwe.lib.umn.edu/main-entry/giigido-vai>.

17 "Gwiinjimaa" Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73031817510n>

18 "Discover the Story of English more than 600,000 Words, over a Thousand Years," Home : Oxford English Dictionary, accessed March 20, 2023, <https://www.oed.com/view/Entry/94474?redirectedFrom=indigenous>.

19 Government of Canada; Crown-Indigenous Relations and Northern Affairs Canada; "Indigenous Peoples and Communities," Government of Canada; Crown-Indigenous Relations and Northern Affairs Canada; August 30, 2022, <https://www.rcaanc-cirnac.gc.ca/eng/1100100013785/1529102490303>.

20 "Interpretation - Definition, Meaning & Synonyms," Vocabulary.com, accessed March 20, 2023, <https://www.vocabulary.com/dictionary/interpretation>.

21 Bob Joseph, "Indigenous Peoples Terminology: Guidelines for Usage," Indigenous Corporate Training Inc. (Indigenous Corporate Training Inc., January 4, 2023), <https://www.ictinc.ca/blog/indigenous-peoples-terminology-guidelines-for-usage>.

22 "Mamizhwi," The Ojibwe People's Dictionary, accessed March 2023, <https://ojibwe.lib.umn.edu/main-entry/mamizhwi-vta>.

Mamiiziniboozh:

(animate) To carve a design in something, carve something intricately, carve something ornately with power tools or a saw²³

Mamiiziniboodoon (inanimate)

Métis:

People of mixed Indigenous and European ancestry.²⁴

Miiniwaa:

Also, and, again²⁵

Mino Bimaadiziwin:

Verbal Explanation:

English Translation: The Good Life

Mino: Good²⁶

Bimaadiziwin: Life²⁷

Mitigoong:

On/at a tree

Mitig: Tree

Ong: Location

Miziniboozh:

(animate) Carve something with a saw

Miziniboodoon (inanimate)

Mjikaawanak:

(plural) Something worn on the hand

English Translation: Mittens, Gloves

Minjikaawan (singular)²⁸

Mookomaanens:

(singular) Penknife, small knife²⁹

Mookomaanensan (plural)

23 "Mamiiziniboozh" Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73033211696n>

24 Bob Joseph, "Indigenous Peoples Terminology: Guidelines for Usage," Indigenous Corporate Training Inc. (Indigenous Corporate Training Inc., January 4, 2023), <https://www.ictinc.ca/blog/indigenous-peoples-terminology-guidelines-for-usage>.

25 "Miiniwaa," miinawaa (adv conj) | The Ojibwe People's Dictionary, accessed March 2023, <https://ojibwe.lib.umn.edu/main-entry/miinawaa-adv-conj>.

26 "Mino-," The Ojibwe People's Dictionary, accessed March 2023, <https://ojibwe.lib.umn.edu/main-entry/mino-pv-lex>.

27 "Bimaadiziwin" Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://ojibwe.lib.umn.edu/main-entry/bimaadiziwin-ni>

28 "Minjikaawan," The Ojibwe People's Dictionary, accessed March 2023, <https://ojibwe.lib.umn.edu/main-entry/minjikaawan-na>.

& "Minjikaawan " Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n71429741781n>

29 "Mookomaanens " Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n71429741781n>

Nban'gaakkonaa:

I'm debarking something.³⁰

N: I (Me)

Banagaakkonaa: debarking something

N'Bimiwinaa:

(animate) I'm carrying something, I'm transporting something³¹

Bimiwidoon (inanimate)

Nomadic:

A community that moves from place to place, often following animal migration

Odoodem:

An Ojibwe term meaning my clan³², used in this body of text as the noun, clan.

Ombaabiso:

Steam, Smoke³³

Onikozh:

(animate) Cut him/her to shape

Onikodan (inanimate)

Onadin:

(animate) form, shape, knead, mold something by hand

Onadinan (inanimate)³⁴

Onzigaazo:

(animate) To be boiled

Onzigaade (Inanimate)³⁵

Pan-Indigenous:

A grouping of Indigenous Cultures into one dominant culture, rather than recognizing individual cultures and distinct practices.³⁶

Pre-Contact:

The time prior to the arrival of European settlers on Turtle Island.

30 "Nban'gaakkonaa " Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n201611710-7-4n>

31 "N'Bimiwinaa " Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n72978052881n>

32 "Odoodem " Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73017940370n>

33 "Ombaabiso " Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n71429446331n>

34 "Onadin," The Ojibwe People's Dictionary, accessed March 2023, <https://ojibwe.lib.umn.edu/main-entry/onadin-vta>.

35 "Onzigaazo " Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73099836682n>

36 Twitter (Twitter), accessed March 20, 2023, <https://twitter.com/johnniejae>.

Revitalization:

The act or process of giving fresh vitality, strength, or energy to something - in the context of this thesis, usually language or culture.³⁷

Traditional Territories:

The ancestral and contemporary connections of Indigenous peoples to a geographical area.³⁸

Treaties:

Agreements made between the Government of Canada, Indigenous groups and often provinces and territories that define ongoing rights and obligations on all sides.³⁹

Turtle Island:

Anishinaabe name for North America.

Vernacular:

The style in which ordinary houses and structures are built in a particular region - pertaining to architecture.⁴⁰

Waagizi:

(animate) To be bent, be crooked, be curved, be warped
Waagaa (inanimate)⁴¹

Weweni:

Correctly, good, properly, well, thoroughly⁴²

Zhibii'ganaatik:

Literal Translation: Writing Stick⁴³
English Equivalent: Pencil

37 "Revitalization Definition & Meaning," Dictionary.com (Dictionary.com), accessed March 20, 2023, <https://www.dictionary.com/browse/revitalization>.

38 "Indigenous Territory," The Canadian Encyclopedia, accessed March 20, 2023, <https://www.thecanadianencyclopedia.ca/en/article/indigenous-territory>.

39 Government of Canada; Indigenous and Northern Affairs Canada; Communications Branch, "Treaties and Agreements," Government of Canada; Indigenous and Northern Affairs Canada; Communications Branch, February 28, 2023, <https://www.rcaanc-cirnac.gc.ca/eng/1100100028574/1529354437231>.

40 "Vernacular Definition and Meaning: Collins English Dictionary," Vernacular definition and meaning | Collins English Dictionary (HarperCollins Publishers Ltd), accessed March 20, 2023, <https://www.collinsdictionary.com/dictionary/english/vernacular>.

41 "Waagizi" Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73032213070n>

42 "Weweni" Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73030622947n>

43 "Zhibii'ganaatik" Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73033581397n>

Zoongikishin:

(animate) A sticklike object standing firmly where it's erected.⁴⁴
Zoongikisin (inanimate)

Zhibii'ge:

Write⁴⁵

44 "Zoongikishin," Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73036023421n>

45 "Zhibii'ge," Nishnaabemwin Online Dictionary: Public, accessed March 2023, <https://dictionary.nishnaabemwin.atlas-ling.ca/#/entry/n73033581513n>

Preface

This thesis has led me through a process of discovery and exploration. It has allowed me to not only explore a two-eyed approach to academic research but also to explore my own personal connection to indigeneity. Although my personal ancestral lineage stems from the Abenaki Nation near Quebec City and offers no ancestral connection to the community with which this body of work has been completed, I felt it pertinent to produce a thesis that spoke in direct connection to the land I was born and raised on. As a result of several socio-political circumstances, individuals feel connected at varying degrees to their Indigenous lineage and traditions. In my case, the acknowledgement of any such connection was denied up until a couple of years ago. Due to the outspoken voices of BIPOC communities and groups, a widespread conversation about recognition and social acceptance was unleashed. This wave of dialogue permitted my amazing grandparents to feel comfortable and safe enough to embrace and share aspects of their lineage that were once too taboo to discuss, let alone explore. The presented thesis represents a stepping stone within my own journey of self-discovery. It has allowed me to discuss topics in and around the notions of Indigeneity, Identity and language with so many amazing people and for that, I will be forever grateful.

Introduction

Introduction

Throughout the historical and contemporary circumstances of Canada's development as a country, the languages and identities of Indigenous peoples have been rejected and denigrated. Through the implementation of various policies intent on assimilating the diverse Indigenous Nations into Euro-Canadian society, the Government of Canada has rejected the First Peoples of Turtle Island as essential contributors to the country's foundation and development. These enforced policies, as well as their inherent biases, have shaped the relationship between Indigenous Peoples and Canadians, past and present. Encountered daily, these systemic biases have impacted the bond of various Indigenous Peoples to their cultural roots, thus impacting the sharing of oral traditions and the use of Indigenous languages.

Through the act of making and discussing, this thesis explores how an architectural interpretation of language can foster the design of safe, comfortable and familiar community-centered spaces. This body of knowledge questions what role architecture and the built environment have in the revitalization of language and the expression of community resilience. By analyzing the connection between Ojibwe language, culture, identity and vernacular architecture, the present work stands as a critique of imposed Western building typologies into First Nation communities and contexts. This thesis demonstrates how an architectural interpretation of the Ojibwe language–Anishinaabemowin learning process can promote the design of rooted and sustainable building practices and typologies familiar to First Nations communities situated within the vast territory of traditional Ojibwe language speakers.

The community of Atikameksheng Anishnawbek First Nation outlines within its Council documents its strategies and the strong desire for its members to revitalize the knowledge of their history in order to better appreciate their language and traditions.⁴⁶ Conducted in support of the Atikameksheng Anishnawbek First Nations' Ojibwe language revitalization plans, the present research body investigates how architectural interventions can foster teachings throughout the duration of their inhabitation, as well as through the act of their construction. By conducting community discussions and the analysis of retrospective literature, common and key themes pertaining to language, identity, and architecture are identified. Pertinent in different facets to the interpretation of rooted architectural design these themes are explored through various processes. To center the importance of a conscious architectural approach, the thesis narrative reflects the conducted process to achieve a community-based design. Within the following 5 chapters, the reader will be taken through the processes of contextual groundwork, interpretive literary review, broad community discussion, immediate community consultation and design development.

In the first chapter, titled “Echoes of the Land”, a brief historical context is provided to create an awareness of the present settler-colonial biases engrained in Canada’s distant and recent story. This chapter represents the first step taken in the process of community consultation. Its content allows the reader to approach the presented research explorations with an open, educated and empathetic dialogue. By briefly exploring the importance of original narratives and stories, the chapter provides an insight into the Anishinaabe Nations’ interconnected worldviews.⁴⁷ The presented material gives the reader a glimpse into some of the linguistic realities faced

46 Comprehensive Community Plan: Atikameksheng Anishnawbek, (Community members of Atikameksheng, Atikameksheng Chief and Council, and Atikameksheng Anishnawbek Staff, March 2020) 8

47 Susan Manitowabi, Historical and Contemporary Realities: Movement Towards Reconciliation, (Open Library, eCampusOntario), accessed October 16, 2022, 10

by the Atikameksheng Anishnawbek First Nation. It provides an understanding of the immense strength and resilience exhibited by Indigenous Peoples in Canada. The use of the word “echoes” in this chapter’s title acknowledges the current realities faced by Indigenous communities across Turtle Island “echoing” from distant and not-so-distant sources.⁴⁸

The second chapter, titled “Language in Discourse” presents an experimental literature review. This chapter continues the process of community consultation by gathering contextual information from relevant, diverse and reliable authors. The presented material analyzes and interprets gathered concepts from written and oral sources through small three-dimensional sketch models. These maneuverable models allow for the continuous re-interpretation of represented themes and topics. Serving as a bridge between digested information, be it written or spoken, these models allow the reader to visually and spatially grasp links and relationships between key identified themes.

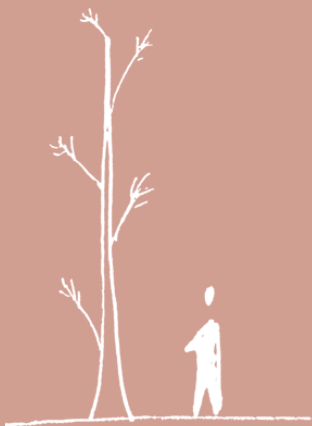
In the third chapter, titled “Let’s Talk Learning” multiple interviews conducted with professionals in the education boards in the Greater Sudbury Area are presented. The findings of these conversations represent the beginning stages of a larger community interaction within the thesis research body. By outlining the available educational resources and the status of Indigenous language learning in the broad community around Atikameksheng, this chapter provides a glimpse into the realities of minority language learning in northern-eastern Ontario. It allows the reader to understand the current access to Indigenous language learning resources within the varied levels of public education.

48 Erin Hanson, “Aboriginal Rights,” *indigenousfoundations*, accessed September 18, 2022. https://indigenousfoundations.web.arts.ubc.ca/aboriginal_rights/.

The fourth chapter, titled “Making Dialogue”, outlines the findings from discussions held with members of the Atikameksheng Anishnawbek First Nation. This chapter provides a clear direction through which an architectural proposal can be adapted to support the community’s envisioned sustainable revitalization plans. It presents key needs and teachings surrounding the process of construction and outlines the main community consultations through which the subsequent design stages are channelled. The portrayed material investigates the life cycle of vernacular building typologies and cladding compositions traditional to the region. Understanding the land-based centrality of the Ojibwe language and culture, these analyses allow for an understanding of sustainable and land-based building practices. This chapter outlines how a rooted architectural intervention can be used as a tool to reconnect the community to its traditions and demonstrate its strength.

In the fifth chapter, titled “Space for Language,” a rooted architectural typology proposal is presented. Drawing inspiration from local vernacular bent wood typologies and key elements outlined during community conversations, the design utilizes readily available materials and trees found in and around the Atikameksheng reservation space. The proposed structural language represents an interpretation of Ojibwe language learning and provides teaching opportunities throughout its life cycle. The chapter outlines the various ways in which this structure can meet the aspirations of the Atikameksheng Anishnawbek First Nation. This body of work outlines material explorations conducted to test various construction methods, ensuring that the bentwood typology can be constructed in differing locations. Although conceived to be placed within the Atikameksheng Anishinaabe community, the proposed typology may be used, with minor alterations, across the traditional Ojibwe territory. Presented as a kit of parts, the proposal allows the community to explore different spatial configurations and compositions to best meet their diverse needs.

Chapter 1



Chapter 1 - Echoes of the land

In order to consider design as a means through which healing and revitalization can be fostered, we must listen. How can designers adopt architecture or the built environment as a medium to support Indigenous language revitalization without first and foremost listening to the stories of these First Peoples and the lands upon which they stand? To understand how designs should be approached and applied, one must acknowledge the echoes of the land and the ripples present in its stories.

Situated within a settler-colonial context—Canada, it is important to acknowledge that the land upon which we stand, that of Turtle Island, was once occupied and cared for by its original inhabitants, the First Nation and Inuit peoples. These First Peoples lived in complete synchronization with the ecosystems and landscapes surrounding them.⁴⁹ They lived in distinct sovereign Nations with trade agreements, individual belief systems, customs and languages; all specific to their traditional territories and their environment.⁵⁰ “Traditional pre-contact North American First Nation cultures were essentially survival cultures. This is not in any way meant to imply that such a state of existence was the extent of their capabilities; rather, they were people who were content with being, not bent on doing.”⁵¹

49 John W. Friesen, *Rediscovering the First Nations of Canada*, Calgary: Detselig Enterprises Ltd., 1997, 23

50 Susan Manitowabi, *Historical and Contemporary Realities: Movement Towards Reconciliation*, (Open Library, eCampusOntario), accessed October 16, 2022, 17

51 Friesen, *Rediscovering the First Nations of Canada*, 23

1.1 - Anishinaabe-Mino Bimaadiziwin

To understand a culture's worldview, one must begin by hearing its story of Creation. "Contained within creation stories are relationships that help to define the nature of the universe and how cultures understand the world in which they exist."⁵² The First Nation peoples occupying traditional territory in and around the Great Lakes region are the Anishinaabeg⁵³ Nations. These Nations center their story of creation around acts of reciprocity and gratitude. Although the telling of the creation story differs across the Anishinaabe territory, the story depicts animals assisting a main character, whether this be Skywoman⁵⁴ or Nanabush⁵⁵, who is floating in a flooded world. The animals provide aid for this individual, by each attempting to dive to the bottom of the flooded world's water to grasp a handful of mud. Depending on the telling, there are many potential storylines, but the outcome remains the same, ultimately acts of gratitude and selflessness result in the growth of a landmass on the back of a turtle, thus creating Turtle Island⁵⁶ (See Figure 1.0). This story at its base represents the direct connection between the Anishinaabeg Nations, the land on which they live and all living creatures upon this land. Although in line with many Indigenous groups, the Anishinaabe way of knowing can be represented by a circle.⁵⁸ This symbol represents the interconnectedness that exists between all living things and expresses the greater whole humans are part of, known as life.⁵⁹

52 Thomas King, "'You'll never believe what happened' Is always a great way to start", in *The Truth About Stories: a native narrative*, (House of Anansi Press Inc, 2003), 10

53 As seen in the glossary, different spellings are used to describe the Anishinaabek people. These spellings respect the spelling used by communities and authors.

54 Wilika Matchweta Asimont, "The Creation of Turtle Island - Ojibwe Creation Story," *Life As A Human*, August 28, 2013, <https://lifeasahuman.com/2013/arts-culture/culture/the-creation-of-turtle-island-ojibwe-creation-story/>.

55 The creation of Turtle Island, accessed December 6, 2022, <http://dhseagles.kpdsb.on.ca/about/aboriginal/creationTurtleIsland.html>.

56 The creation of Turtle Island, accessed December 6, 2022, <http://dhseagles.kpdsb.on.ca/about/aboriginal/creationTurtleIsland.html>. & Asimont, "The Creation of Turtle Island - Ojibwe Creation Story"

57 William R. Morin. "Makinaak / Mishiikenh Kinomaagewok: Turtle Teachings." *Birds of Pray Create: images with a message*. 2021

58 Manitowabi, *Historical and Contemporary Realities*, 10

59 Manitowabi, *Historical and Contemporary Realities*, 10



Figure 1.0 : Artist depiction of Turtle Island

This painting, completed in 2018 by William Morin depicts the continent of North America as a Turtle. It visually demonstrates the landmass grown on the back of the turtle as described in the Anishinaabe creation story, Turtle Island.

The turtle is a great teacher, it is symbol reminding Anishinaabek of their roles and their relations to mother earth. Its shell scales, as well as its overall composition, coincide with the moon cycles, the four seasons and acts as an ancient living calendar.⁵⁷

Figure 1.1 : Ojibwe Cultural Foundation Nindoodem

This line image traces an example of dodem iconography drawn on rocks. The presented depictions are found surrounding the Ojibwe Cultural Foundation in M'Chigeeng, on Manitoulin Island.



“The Aboriginal people view the earth as their Mother and the animals are their spiritual kin.”⁶⁰ This kin relationship is expressed through the dodem–clan system, which is central in Anishinaabe origin narratives and constructs firm ties between people and specific landscapes.⁶¹ These dodems take the form of animals found across the traditional Anishinaabe territory (See Figure 1.1) and were used as a way to identify families and travelling Anishinaabe peoples.⁶² The Anishinaabe traditional territory spans a large land base from Last Mountain Lake in Saskatchewan, near Regina to the meeting point of the Ottawa and St-Laurence Rivers, near Montreal⁶³ (See Figure 1.2). “While [the term] Anishinaabe is most commonly used to describe Ojibwe people, it can [also be used to] refer to other First Nations. [...] Anishinaabe is not a synonym for Ojibwe”⁶⁴. Rather, it is a term used to describe a particular grouping of cultures and nations that share a common worldview.⁶⁵ The Ojibwe people utilize the word Anishinaabe to describe themselves in their language.⁶⁶ This is why the term is most commonly used to describe them.⁶⁷ Occupying mostly territory within the Northern Forest (also known as the Boreal Shield), the

Figure 1.2 : Traditional Anishinaabe Territory

This map utilizes waterbodies as points of reference to consciously ignore the colonially established borders.

Figure 1.3 : Ecozones within the Traditional Territory

60 Manitowabi, *Historical and Contemporary Realities*, 10

61 Heidi Bohaker, “Anishinaabe Toodaims,” in *Gathering Places : Aboriginal and Fur Trade Histories*, Carolyn Podruchny, Laura L. Peers, and Laura L. (Laura Lynn), Peers Vancouver: UBC Press, 2010, 96-99

62 Darin Corbiere, “Lets Start Ojibwe - Lesson 2, Hello Goodbye,” YouTube (Sault College, February 21, 2013), <https://www.youtube.com/watch?v=Z6v-8QCU-Cw&list=PL7XVz2qhjMdGe7COzL5HdwSaa06JZIZjN&index=5>.

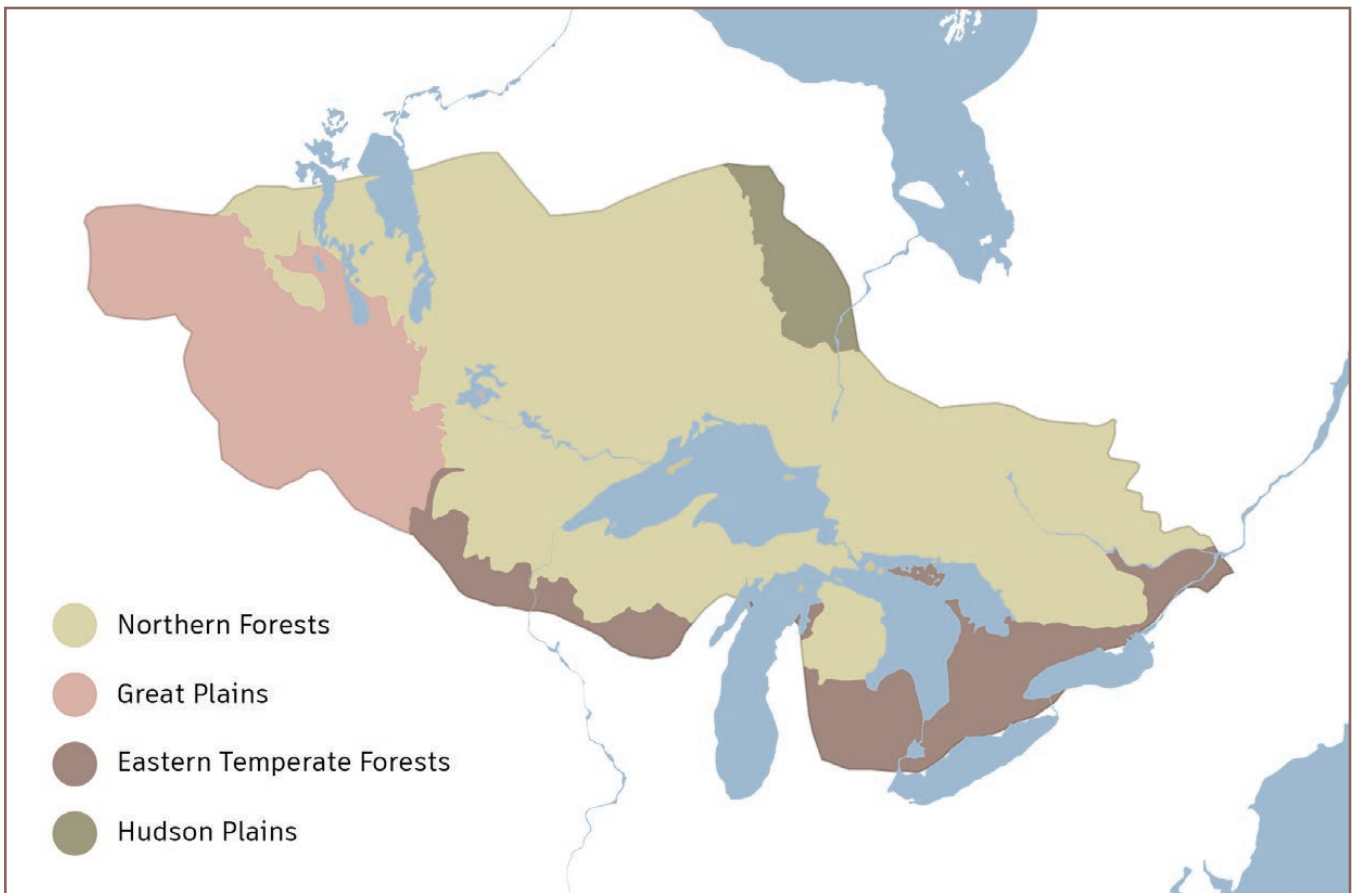
63 “Anishinabewaki,” Native Land Digital, November 14, 2022, <https://native-land.ca/maps/territories/anishinabek-%E1%90%8A%E1%93%82%E1%94%91%E1%93%88%E1%90%AF%E1%92%83/>.

64 Karl S. Hele “Anishinaabe,” *The Canadian Encyclopedia*, July 16, 2020, <https://www.thecanadianencyclopedia.ca/en/article/anishinaabe>.

65 Hele, “Anishinaabe”

66 “Anishinaabe,” *The Ojibwe People’s Dictionary*, accessed December 14, 2022, <https://ojibwe.lib.umn.edu/search?utf8=%E2%9C%93&q=anishinaabe&commit=Search&type=ojibwe>.

67 Hele, “Anishinaabe”



Ojibwe are mostly identified as a woodland culture⁶⁸. That being said, it's interesting to note that the Anishinaabe traditional territory spans into four different environmental zones (See Figure 1.3): the Northern Forest, the Great Plains, the Hudson Plains and the Eastern Temperate Forests⁶⁹. Although Ojibwe people share a common language and thus a common lens through which they perceive the world, there exist variations in their ways of life. Due to the widespread distribution of Ojibwe inhabitation within their traditional territory, lifestyles, ceremonial customs, artistic expressions, consumed foods and sported attire vary. For example, those occupying land in the southern territory establish more permanent settlements. Due to the long growing season, they center themselves mostly around agricultural practices⁷⁰. Those in the northern territory follow a slightly more nomadic lifestyle. Due to the limited growing season, they rely more heavily on hunting and fishing⁷¹. It is said that the Ojibwe are a strong people, even after European contact they continued extending their territory south and west up until the 1800s.

68 Manitowabi, *Historical and Contemporary Realities*, 19

69 Mapping our shared environment: North American Environmental Atlas (Guanajuato, Mexico: Commission for environmental cooperation, 2010), 28

70 Manitowabi, *Historical and Contemporary Realities*, 19

71 Manitowabi, *Historical and Contemporary Realities*, 19

1.2 - Settler Settings

Due to its settler-colonial development, it is important to investigate and question the mass-presented perspectives of Canada's story. Too frequently are individuals presented with a west-washed recounting of events. How can designers consider themselves allies if they are not recognizing the consistent and contemporary discrimination of Indigenous Peoples in Canada? The following section is intended to provide the reader with a brief overview of the events impacting First Nation communities in the Great Lakes region. This context is intended to demonstrate the engrained settler-colonial biases present in Canadian legislation and the role they played in attempting to eradicate Indigenous Language and Identity.

Throughout the pre-confederate history of the country now colonially known as Canada, the Great Lakes region acted as an important resource for trade and revenue for the European colonies.⁷² Seeing the land as a resource to be extracted and as property to be claimed⁷³, the Europeans established trade routes and settlements based around resource extraction. "The Great Lakes region probably shows the damage inflicted by modern civilization more graphically than most other geographic territories on this continent."⁷⁴ This strong land rich with natural resources fed the fur trade and the eventual logging and mining industries⁷⁵. Present inland from the seaways and in the heart of a vast landscape, the land-based knowledge and technologies of the indigenous peoples quickly became essential to the survival of the colonies and their operations in and around the Great Lakes.

The establishment of European colonies on Turtle Island wasn't

⁷² Manitowabi, *Historical and Contemporary Realities*, 21

⁷³ Brenna Bhandar, *Colonial Lives of Property: Law, Land and Racial Regimes of Ownership* (North Carolina: Duke University Press, 2018)

⁷⁴ Friesen, *Rediscovering the First Nations of Canada*, 83

⁷⁵ Manitowabi, *Historical and Contemporary Realities*, 22

without its wars and conflicts⁷⁶. Although Indigenous Nations often allied themselves with either the French or the English to partake in the European trading system and to promote the peaceful sovereign growth of either Nation, conflicts did arise between Nations - sparking the need for treaties and amendments. In a colonial setting, power and authority are measured in claimed land mass and controlled resources⁷⁷. This approach to inhabitation contrasts the view of the indigenous peoples of Turtle Island and caused the settlers to identify the First Nation and Inuit peoples' use of the land as unfit.⁷⁸ Seen as underutilizing the resources provided to them, Indigenous Nations and communities were displaced and were allocated less favourable plots of land. These plots were often rocky outcroppings or swampy terrains, void of mineral resources and often infertile for agriculture. This displacement started slowly in the first decades of co-inhabitation as Indigenous Peoples agreed to share their territories with the expanding European colonies.⁷⁹ As time progressed, these "shared lands" were claimed by the Europeans and were permanently populated. Following the Seven Year War, in the mid-1700s, the English Crown became the dominant European power in North America. This power shift affected the lands allocated to First Nation, Inuit and Métis Nations who allied with the French forces. In 1763, a Royal Proclamation was issued stating new administration procedures and acknowledging Indigenous rights to land. Reserved plots of land were attributed to various Indigenous groups, allowing them to live freely within designated reservation spaces. The English monarch identified that a continued stable and peaceful relationship would be necessary with First Nations if they were to remain in control of the colonies.⁸⁰ "Up until the late 18th century, commercial and military

76 "Indigenous Peoples," The Canadian Encyclopedia, accessed October 19, 2022, <https://www.thecanadianencyclopedia.ca/en/timeline/first-nations>.

77 James S. Frideres, and René R. Gadacz, *Aboriginal Peoples in Canada*, 9th ed. Toronto: Pearson, 2012. 4-9

78 Frideres, and Gadacz, *Aboriginal Peoples in Canada*, 4

79 Manitowabi, *Historical and Contemporary Realities*, 29

80 Manitowabi, *Historical and Contemporary Realities*, 31

needs continued to form the basis of the relationship between First Nations people and the Crown.”⁸¹

After the War of 1812, the relationship between the British and the First Nations changed fundamentally as ideologies of British superiority began to emerge. In the early 1800s, the establishment of mining settlements in the northeastern area of the Great Lakes sparked the creation of treaties in the Great Lakes region, known as the Robinson treaties. These treaties were signed after years of protest by the Ojibwe Nations against the Government. The resources provided to Ojibwe by the land were being extracted and profited from by settlers without their permission. In the years to follow, Indigenous peoples of the Great Lakes region and across Canada were subject to increasing rules, regulations and restrictions. The Colonial Government felt “it was their duty to bring Christianity and agriculture to Indigenous peoples.”⁸² In 1876 a federal law containing policies intent on terminating the “cultural, social, economic and political distinctiveness of Indigenous peoples”⁸³ was introduced; The Indian Act. This Act prohibited the practice of particular traditions but lacked the authority to disturb the oral transmission of cultural knowledge⁸⁴. In 1927, this act was amended making the attendance of all school-aged children mandatory in state-sponsored facilities, known today as Residential Schools.⁸⁵ These Residential Schools, scattered throughout Canada, had the goal of assimilating Indigenous children into Euro-Canadian culture by isolating them from their familial

81 Manitowabi, *Historical and Contemporary Realities*, 32

82 Manitowabi, *Historical and Contemporary Realities*, 43

83 Manitowabi, *Historical and Contemporary Realities*, 43

84 Erin Hanson, “The Indian Act,” *indigenousfoundations*, accessed September 18, 2022, https://indigenousfoundations.web.arts.ubc.ca/the_indian_act/

85 Erin Hanson, Daniel P. Games, and Alexa Manuel, “The Residential School System”, *indigenousfoundations*, accessed September 18, 2022, <https://indigenousfoundations.web.arts.ubc.ca/residential-school-system-2020/> & J.R. Miller, “Residential Schools in Canada,” *The Canadian Encyclopedia*, accessed September 18, 2022. <https://www.thecanadianencyclopedia.ca/en/article/residential-schools>.

IMPORTANT NOTE:

Although this section presents a summary of events, it by no means represents an exhaustive analysis of the story of Indigenous People in Canada.

If readers are unfamiliar with the historical context of Indigenous People in Canada, they are encouraged to consult the cited sources and further pursue an independent investigation of the subject matter.

communities and forcibly teaching them a new culture and language.⁸⁶ In 1951, the Act was once again amended, providing provincial jurisdiction over child welfare and leading to the mass removal of Indigenous children from their communities and homes.⁸⁷ The removed children were often placed into Euro-Canadian households and told to forget their place of origin.⁸⁸ This widespread removal of children is known as the Sixties Scoop and represents yet another attempt at assimilation into Euro-Canadian culture. Mireille Gansel states in her writings that, “Native Language is not a set of grammar rules and regulations, it is the child’s spiritual nourishment.”⁸⁹ This quote is incredibly strong in the way that it can be used to convey the effective approach of these actions taken by the Church and the Government of Canada. These tactics of assimilation funded by the Government of Canada have forced Indigenous communities to provide for themselves community-centered child welfare services, education support systems, culture-conscious mental health services and cultural healing and revitalization programs. Through their goal of “remov[ing] the Indian from the child”⁹⁰, they attacked the most basic notion of identity and the learning tools utilized for the sharing of oral traditional knowledge, **language**.

86 Hanson, Games, and Manuel, “The Residential School System”, & Miller, “Residential Schools in Canada,”

87 Erin Hanson, “Sixties Scoop,” indigenousfoundations, accessed September 18, 2022, https://indigenousfoundations.web.arts.ubc.ca/sixties_scoop/

88 Becoming Nakuset, Becoming Nakuset (CBC/Radio Canada), accessed September 22, 2022, https://gem.cbc.ca/media/becoming-nakuset/s01e01?cmp=DM_DOCS_FEED_GEM_CARD_becoming-nakuset.

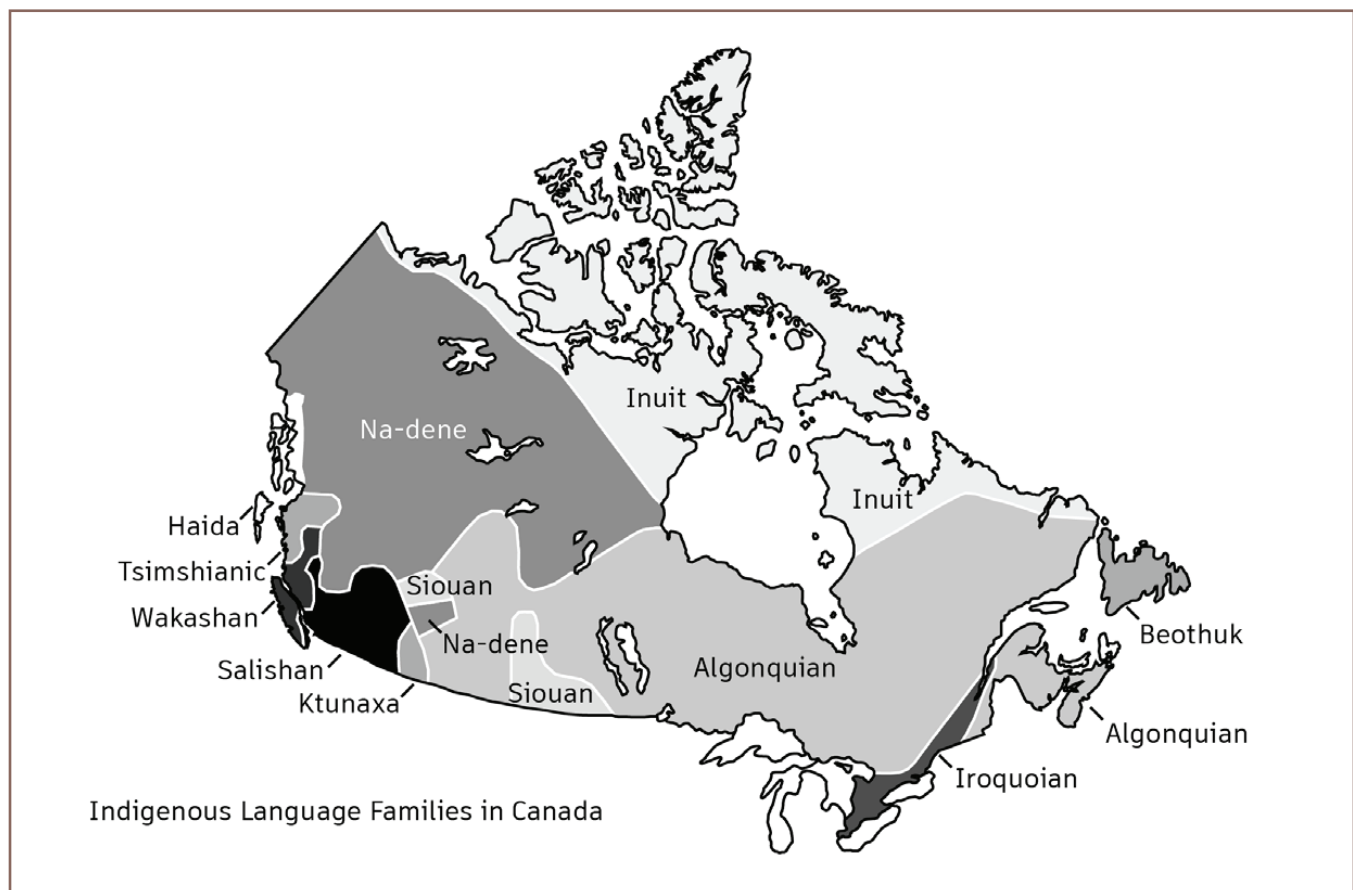
89 Mireille Gansel, Translation as Transhumance trans, Ros Schwartz, (New York: Feminist Press at CUNY, 2017), 29-34.

90 J.R. Miller, “Residential Schools in Canada,” The Canadian Encyclopedia, accessed September 18, 2022. <https://www.thecanadianencyclopedia.ca/en/article/residential-schools>.

1.3 - Voicing current realities

It can be stated that languages are an essential component of cultural and individual identity. James S. Frideres states that “[t]he language of any group is the repository of concepts, images and history that allows individuals to organize their social environment”; he goes further to express that “it is not only a means of communication but a link that connects people with their past and grounds their social, emotional and spiritual needs”⁹¹. Within the Canadian portion of Turtle Island, there are approximately 90 distinct indigenous languages⁹². These languages are categorized into 12 different language families⁹³ (See Figure 1.4) and are each very specific to their immediate environment

Figure 1.4 : Indigenous Language Families in Canada



91 Frideres, and Gadacz, *Aboriginal Peoples in Canada*

92 "Indigenous Languages in Canada - Inuit Tapiriit Kanatami," accessed September 18, 2022, https://www.itk.ca/wp-content/uploads/2017/06/TableauFiP_EN.pdf.

93 Indigenous Languages in Canada - Inuit Tapiriit Kanatami

and traditional territories⁹⁴. According to UNESCO's Atlas of the World's Languages in Danger⁹⁵, all of the Indigenous languages in Canada fall within four degrees of endangerment (See Figure 1.5); 24 are vulnerable/unsafe, 14 fall under definitely endangered, 16 are stated as severely endangered and 32 are identified as critically endangered. Anishinaabemowin, the language of focus in this body of work, is one of many diverse and distinct languages indigenous to Turtle Island. Spoken across the traditional territory of the Anishinaabe Nation, Anishinaabemowin—the Ojibwe language speaks in direct relation to the surrounding region of the Great Lakes⁹⁶ and is considered to fall under the Algonquian family of languages⁹⁷. Differing from western languages settled in the area, which follow a noun-based grammar structure (such as French and English), many indigenous languages; including Anishinaabemowin, follow a verb-based structure⁹⁸. This structure entails that when speaking, one details how a thing is being done rather than detailing the thing itself, thus generating imagery that is heavily reliant on a context and surrounding-based vocabulary. The Ojibwe dialect that is regional to the traditional territory of the Atikameksheng Anishnawbek First Nation is Central Ojibwe. This particular dialect spans a region from Lake Nipigon, near Thunder Bay to Lake Nipissing, near North Bay⁹⁹ (see Figure 1.5) and is listed within UNESCO's above-mentioned Atlas as definitely endangered; meaning “spoken mostly by parental and older generations”¹⁰⁰.

94 Will Oxford, *Indigenous Languages in Canada*, Edited by Elaine Gold. (Toronto, ON: Canadian Language Museum, 2019), 4-11

95 “Canada and Greenland (113-121)” in *Atlas of the World's Languages in Danger*, 3rd edition, ed. Christopher Moseley (the United Nations Educational, Scientific and Cultural Organization, 2010), 117

96 Hele “Anishinaabe”

97 Will Oxford, *Indigenous Languages in Canada*, 4-11

98 Patricia M. Ningewance, *Survival Ojibwe: Learning Conversational Ojibwe in Thirty Lessons* (2021), 7

99 Wikipedia, 2022, “Central Ojibwa language,” Wikimedia Foundation, last modified November 5, 2022, https://en.wikipedia.org/wiki/Central_Ojibwa_language.

100 Canada and Greenland (113-121), 117

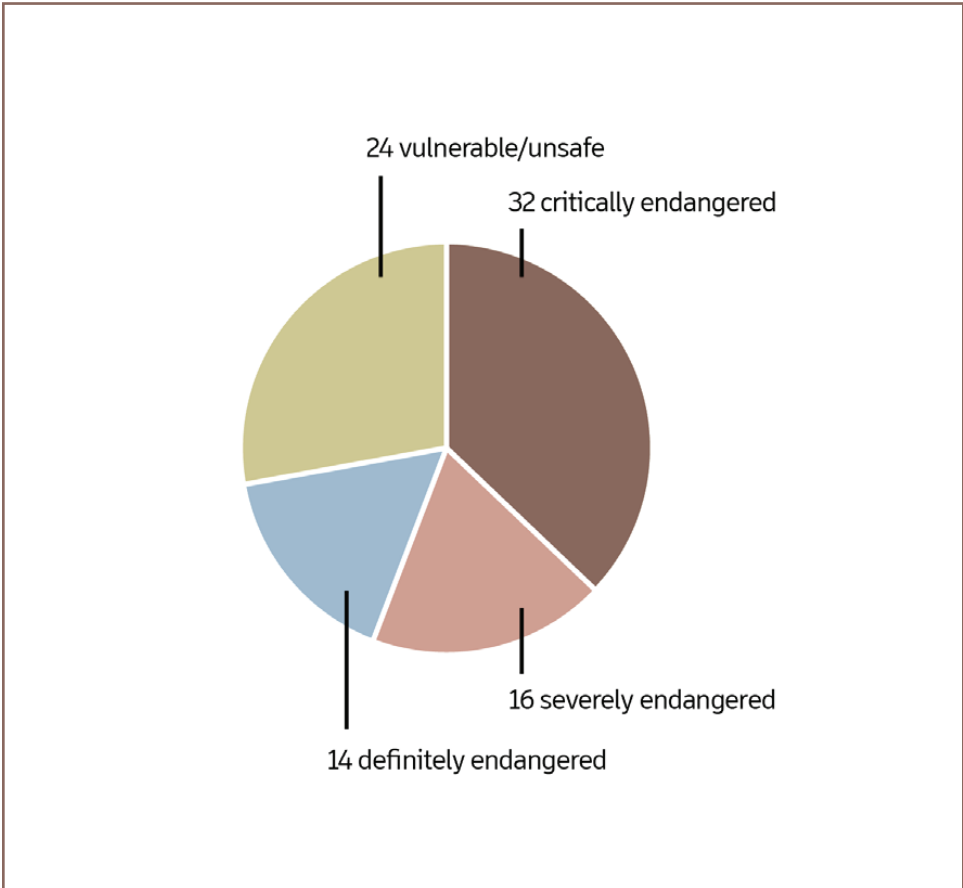
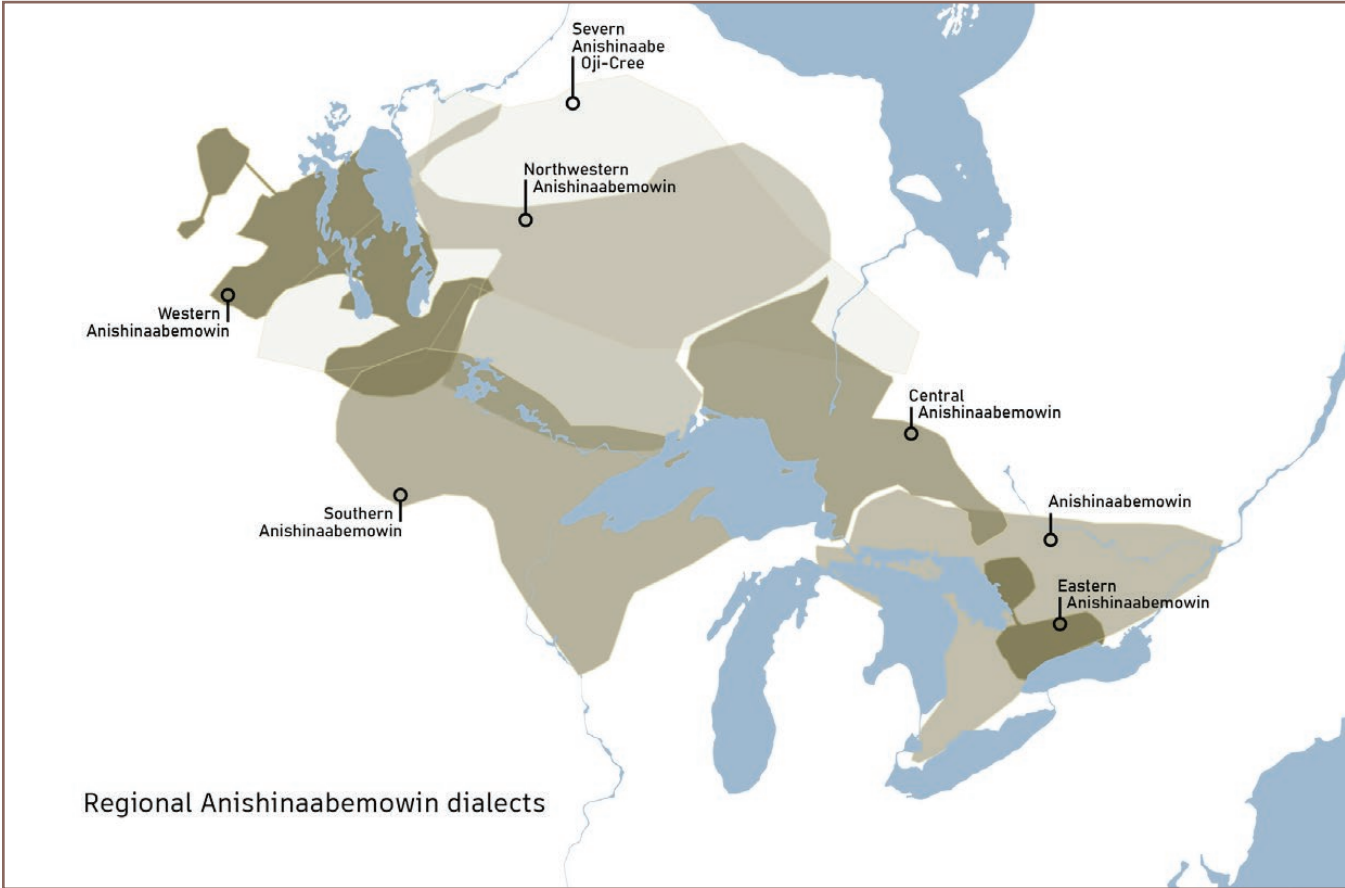


Figure 1.5 : The State of Indigenous Languages in Canada

Figure 1.6 : Regional Anishinaabemowin Dialects



Atikameksheng Anishnawbek First Nation is a First Nation community located inland from the north shore of Lake Huron and Georgian Bay occupying a reservation space of approximately 43,747 acres¹⁰¹. This land base, which contains 18 lakes and is surrounded by another 8¹⁰², is situated along the southeastern border of the city of Greater Sudbury (see Figure 1.6). The footprint of the Atikameksheng community settlement is located in the northwest portion of the reservation land, approximately 19 kms from Sudbury’s downtown core. This First Nation consists of 1,292 members; 378 of which reside on the reserve and 914 of which reside elsewhere¹⁰³. According to statistics collected in 2016 by the Government of Canada’s Census, only 10.4% of the community can speak an indigenous language¹⁰⁴. According to the details outlined in the Atikameksheng Comprehensive Community Plan (ACCP) completed in 2020 by the Atikameksheng Chief and Council, only a few individuals residing within the community are fluent, none of which are from the community itself.¹⁰⁵ Although access to the Ojibwe language exists through the community center’s library¹⁰⁶ and has been incorporated as an optional course within the local schools curriculum, the desire to embrace and revitalize the local linguistic and cultural identity is present and strong.¹⁰⁷ According to the ACCP, members of the First Nation have expressed a desire to revitalize the knowledge of their history in order to better appreciate their traditions.¹⁰⁸

101 Manitowabi, Historical and Contemporary Realities, 6

102 Manitowabi, Historical and Contemporary Realities, 6

103 Community Profile: Atikameksheng Anishnawbek, ed. Multi Year Planning department of Nogdawindamin Family and Child Services, February 2020, 6

104 “Census in Brief: The Aboriginal Languages of First Nations People, Métis and Inuit” (Government of Canada, Statistics Canada, October 25, 2017), <https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016022/98-200-x2016022-eng.cfm>.

105 Atikameksheng Anishnawbek, Comprehensive Community Plan, 6

106 “Language,” Atikameksheng Anishnawbek, accessed October 18, 2022, <https://atikameksheng.anishnawbek.ca/culture-language/language/>.

107 Atikameksheng Anishnawbek, Comprehensive Community Plan, 8

108 Atikameksheng Anishnawbek, Comprehensive Community Plan, 8

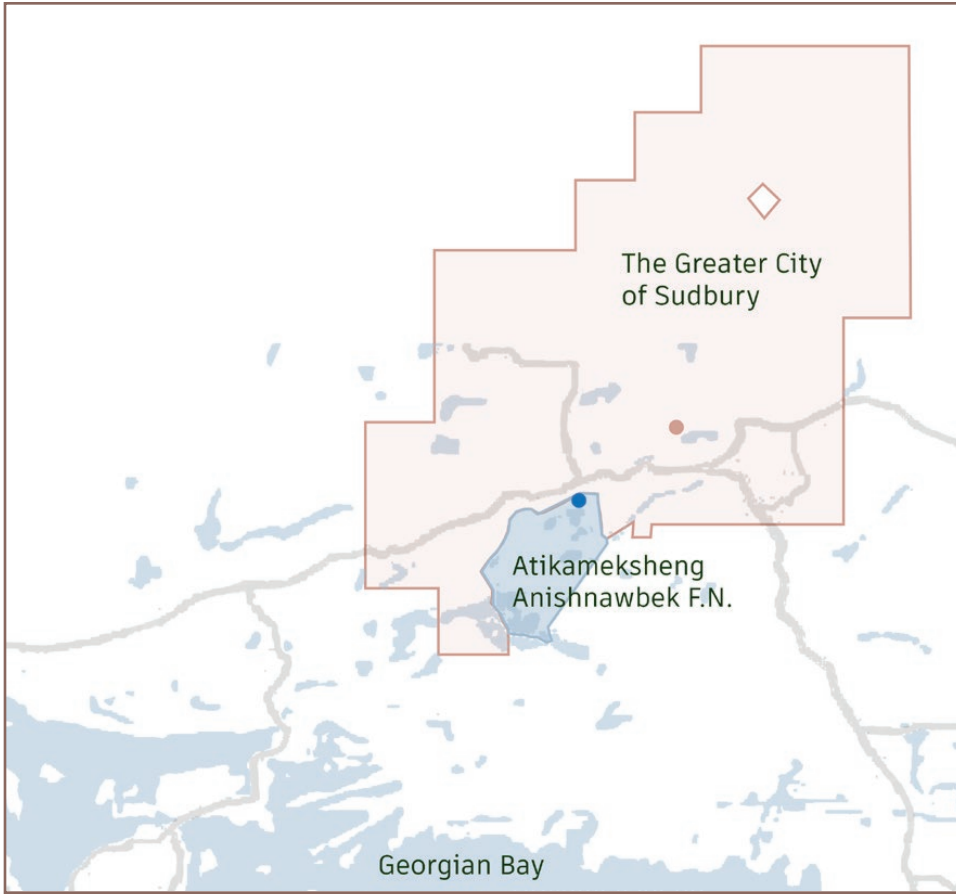


Figure 1.7 : Atikameksheng Located in Proximity to Sudbury and the Georgian Bay

Chapter 2



Chapter 2: Language in Discourse

Due to the land-based centrality of Indigenous linguistic and cultural identities, it is essential to undertake hands-on research methods. This body of work acknowledges the importance of qualitative research and utilizes a hybrid approach by conducting a literary review and analyzing its findings with analytical sketch models. Formally, oral history has a range of meanings from “knowledge about the past that is relayed by word of mouth from one generation to the next,” to “the practice of recording, archiving, and analyzing eyewitness testimony and life histories.”¹⁰⁹ This body of work follows both definitions of Oral History; by listening to traditional knowledge shared by elders and knowledge keepers, as well as by hearing from professional public workers about the current efforts being made in their respective surroundings. This chapter aims to paint a realistic picture of the present realities in the surrounding communities of the Atikameksheng Anishnawbek First Nation.

109 K. R. Llewellyn, & Ng-A-Fook, N, (2017), Oral history and education : theories, dilemmas, and practices (K. R. Llewellyn & N. Ng-A-Fook, Eds.), Palgrave MacMillan, 2

2.1 - Manifesting Materials

While exploring the notions of language and space, it quickly becomes evident that both entities feature interconnected concepts on various planes and must be explored with a three-dimensional material. Approaching this body of research with an architectural lens and background, it has been beneficial to explore the key concepts drawn from readings and conversations through interpretive sketch models. These sketch models are derived mostly from recycled or natural materials to ensure that their environmental impacts are considered within their role as analytical concept portrayals. These models serve as a crucial step in this thesis' interpretation and spatial exploration of the Ojibwe language. The creation of models produces a dialogue capable of being re-interpreted and studied from various perspectives. This cyclical approach to analysis and interpretation stems from the idea of learning through making (See Figure 2.0) These experimental representations produce broad and interconnected learning and exploring opportunities.

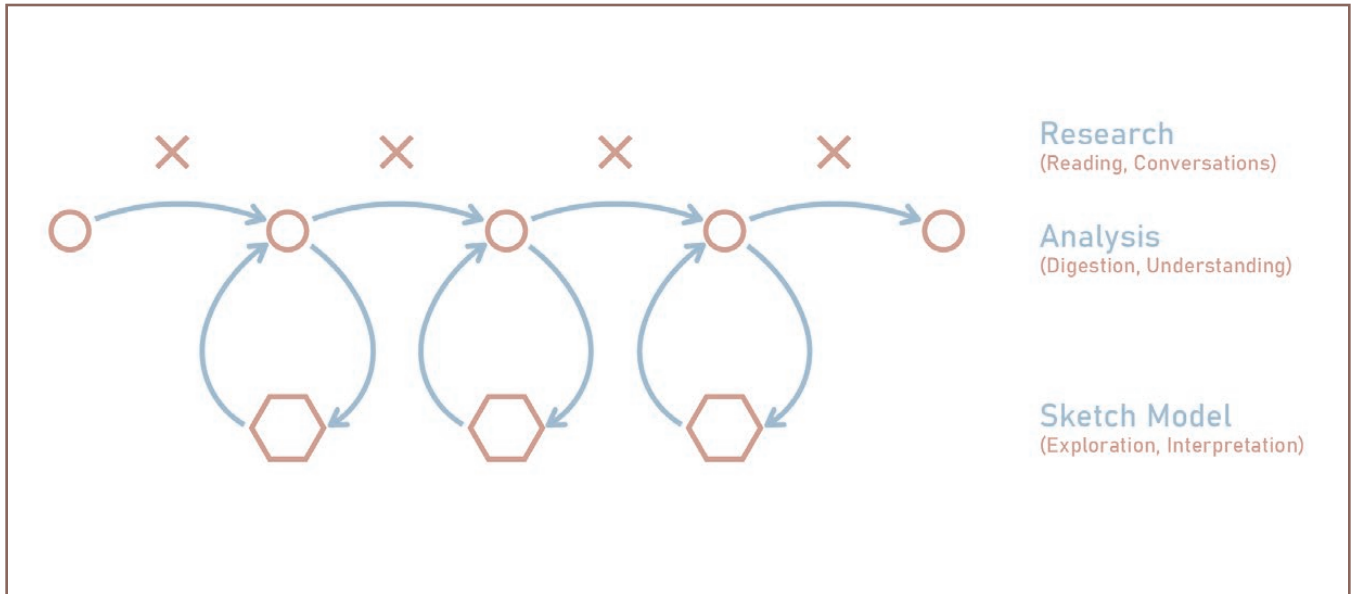


Figure 2.0 : Research Analysis Process

The first creation of a modelled exploration emerges from Susan Manitowabi's depiction of the medicine wheel. In her writings, the medicine wheel is conceptualized as a vessel through which the world is navigated. "The 4 directions [depicted in the medicine wheel] remind us of the need for balance in our lives and that we must work on a daily basis to strive for that balance."¹¹⁰ She describes the medicine wheel as a three-dimensional vessel, not only limited to the four cardinal directions but also including the earth and the sky. The interpreted sketch model, as seen in Figure 2.1, features a medicine wheel portrayed in its contemporary colour palette. It represents the spatial reality of the medicine wheel as a balanced vessel through which the world is experienced. The wireframe extending past the directional plane of the cardinal points represents the interconnected nature of the earth and sky. Early representations of the medicine wheel were created by stones laid on the ground and often included an inner circular center to represent the inner fire and indicate locations.¹¹¹ The sketched model reintroduces the open center as a way to depict the inner fire of oneself. It features a singular wire that connects the inner fire to the extremities of earth and sky. The medicine wheel is a prime depiction of the interconnected worldview of Ojibwe Peoples. It fosters an approach of peace, consideration, and balance between humans, animals and the environments they inhabit.

110 Susan Manitowabi, *Historical and Contemporary Realities: Movement Towards Reconciliation*, (Open Library, eCampusOntario), accessed October 16, 2022, 13

111 Manitowabi, *Historical and Contemporary Realities*, 13



Figure 2.1: Medicine Wheel Vessel
This sketch model is fabricated from recyclable filament with a handheld 3D pen.

Through conversational dialogue with fluent Anishinaabemowin speakers and by attempting to learn for myself aspects of the language, it is very evident that the worldview, the language and the land are entirely interconnected. The architectural interpretation seen in Figure 2.2 reveals the inherent relationship present between the Ojibwe language and stories of the land. It depicts the interconnected story of the terms animikii–thunderbird and omagakii–frog. Contained within both these terms is the suffix kii, which draws from the Ojibwe term for earth–akii. This model represents the story of how these terms are linked not only phonetically but also in their interaction within the natural environment. The thunderbird is a gigantic bird Manitous–spirit that is said to protect the Anishinaabek people and has the ability to create thunderstorms.¹¹² According to various tellings, the thunderbirds create thunder with their wings and generate flashes of lighting from the light within their eyes.¹¹³ During and following a thunderstorm, the song of frogs can often be heard across the landscape. Frogs are raised to the surface after a storm, and in this sense, the thunderbirds and the frogs create a connection between earth and sky.¹¹⁴ In this modelled interpretation, a zigzag shape is used to convey this connection; the zigzag is a nod towards the shape of the lightning bolt originating from the thunderbird, as well as the shape of a frog’s leg. The model represents a physical embodiment of the interconnected lens through which Ojibwe language speakers understand the world.

112 Elle Andra-Warner, “Ojibwe Thunderbird Mythology: Powerful Spirits of the Sky,” *Northern Wilds Magazine*, June 3, 2019, <https://northernwilds.com/thunderbirds-powerful-spirits-sky/>.

113 Andra-Warner, *Ojibwe Thunderbird Mythology*.

114 William Morin, Knowledge Carrier and Anishinaabe Artist, Conversation with the author, November 2022.



Figure 2.2 : Connection to Kii
This sketch model is created from a paperclip, cardboard, birch bark and a cotton pad.

In her book *Braiding Sweetgrass*, Robin Kimmerer presents her approach to two-eyed-seeing. It is described as a “braid woven from three strands: indigenous ways of knowing, scientific knowledge and the story of an Anishinabekwe¹¹⁵ scientist trying to bring them all together in service of what matters most.”¹¹⁶ This book depicts various concepts of indigenous ways of knowing, presenting them within a contemporary context through the author’s own experiences and learnings. In this text, Kimmerer states that healing stories can be medicine for our broken relationship with Mother Earth¹¹⁷. She explains that our perception of the world is entirely dependent on our taught views and most importantly, on the vocabulary we use to describe it. Sharing her own experience of learning her traditional language of Potawatami, Kimmerer explains that it provided, for her, a mirror into the animacy of the world. Through her learning of an indigenous language, she learnt to address beings of nature as equals and describe them with words of gratitude and respect. Her perception was altered from when she only viewed the world through the English language, where anything un-human is described as an object. This small series of models explores perceptions and the ways that vocabulary and language structure can impact it. The first model, as seen in Figure 2.3, demonstrates an analysis of the “mirror into animacy” described by Kimmerer in her writings. It features a small angled mirror providing a glimpse at live moss, representing animacy, which would be otherwise hidden by walls. This mirror represents the vocabularies used to describe our environment, a shift of the mirror’s angle or position could reveal drastically different results and a shifted perception. The second, as seen in Figure 2.4, depicts a cube suspended between two points. From the point of view of each apex, the cube seems to be 3 sided. Only when one is conscious of the existence of both points of view can they truly picture the full cube. This model

115 This spelling is used to respect the spelling of choice utilized by the author in her work

116 Robin Wall Kimmerer, *Braiding Sweetgrass - Indigenous Wisdom, Scientific Knowledge and the Teaching of Plants*. (Minneapolis, MN: Milkweed Editions, 2013), p.x

117 Kimmerer, *Braiding Sweetgrass*, p.x



Figure 2.3 : Mirror into Animacy
This sketch model is composed of scrap mat board, found moss, and a small deconstructed pocket mirror.



Figure 2.4 : Cubed Two-eyed Seeing
This sketch model is composed of paper, cotton string, and recycled model making wood elements.

depicts an analysis and understanding of two-eyed-seeing differing from Kimmerers depiction. The third model, as seen in Figure 2.5, presents a literal vessel through which the world can be interpreted. Providing two contrasting perspectives, the model allows the user to perceive its environment differently based on words and ideas tied to two points of view. A user looking through the green-sided lens might perceive their surroundings in a grateful and understanding manner, influenced by the positive and considerate vocabulary displayed. Whereas a user glancing through the red-sided lens is more inclined to perceive their surroundings as rigid and unforgiving due to the disrespectful and egotistical vocabulary displayed. It can be seen that the use of shifting perspectives and the emphasis on balance are important, not only to maintain a healthy inner self but also to ensure careful consideration for the natural environment.



Figure 2.5 : Shifting Perceptions
This sketch model is constructed
of found cardboard.

The following modelled exploration provides a contextual analysis of the damaged and highly industrialized landscape on which this thesis's study is conducted. In a body of work citing the efforts of a First Nation community residing in, on, and around a landscape poisoned, and once fully decimated, by local mining practices, it feels essential to explore the history of the land through the concept of balance and reciprocity. The model, seen in Figure 2.6, draws inspiration from the reading of Oiva Saarinen's historical geographic rendering of the Greater City of Sudbury¹¹⁸, as well as from various indigenous ways of thinking found in conversations with community members and within Kimmerer and Manitowabi's writings. The outer bent branches represent the natural landscape - they are woven and tied together with a small twine to represent their balanced interconnectedness. The consciously chosen central black element is a small piece of slag - a by-product of the mining smelting process crucial to the mining processes in Sudbury. This model allows its viewer to understand that the presence of a small conscious industrial element does not jeopardize the balance and integrity of the natural landscape that supports it. That being said, if the industrial element was to grow too large, the supporting landscape would be unable to maintain its strength and would break. The broken landscape upon which stands the City of Sudbury and its surrounding communities represents an ecosystem decimated by an unbalanced approach to industry. This model demonstrates the delicate and intentional hand required when utilizing the gifts of the land.

118 Oiva W. Saarinen, *From Meteorite Impact to Constellation City : a Historical Geography of Greater Sudbury*, (Waterloo, Ont: Wilfrid Laurier University Press, 2013)



Figure 2.6 : Balancing Industry in the Natural Landscape
This sketch model is crafted from harvested branches, cotton string, and a collected piece of slag.

Present as a common theme throughout this literary review, the act of reciprocity stands as a fundamental concept featured in the works by Indigenous authors cited in this body of work. This notion of reciprocity is central to the creation story of Turtle Island¹¹⁹ and can be clearly observed in ceremonies. During the construction of a sacred structure, as an act of gratitude, tobacco is offered to mother earth before each tree is harvested from her forest. In ceremonial settings, the burning of tobacco and sage can be conducted as an offering and as a sign of gratitude to mother earth for her generosity. This model exploration seen in Figure 2.7 represents the act of reciprocity as an act of balance. It features an abstracted wire person holding a bundle of beads out in front of them while being supported by a string tensioned backwards. The beads represent the gifts and generosity of the surrounding world, whereas the string represents acts of gratitude and the sharing of these gifts. If the wire person were to release their beads (reject the gifts of mother earth), they would be pulled backwards by the string on their back (be unable to contribute to the good life) and balance would be lost. Likewise, if the tension on the string was to be released (they stopped sharing and showing gratitude), the wire person would be pulled forward by the weight of their beads (a greedy overconsumption of their gifts) and once again, the balance would be lost. This represents the give and take required in a balanced relationship of reciprocity. Although highly conceptualized and simplified within this wire model representation, the concept of reciprocity speaks volumes about the approach of Indigenous peoples to their surroundings. This notion of balance and shared responsibility is present throughout the stories of the land told since time immemorial.

119 Wilika Matchweta Asimont, "The Creation of Turtle Island - Ojibwe Creation Story," Life As A Human, August 28, 2013, <https://lifeasahuman.com/2013/arts-culture/culture/the-creation-of-turtle-island-ojibwe-creation-story/>.

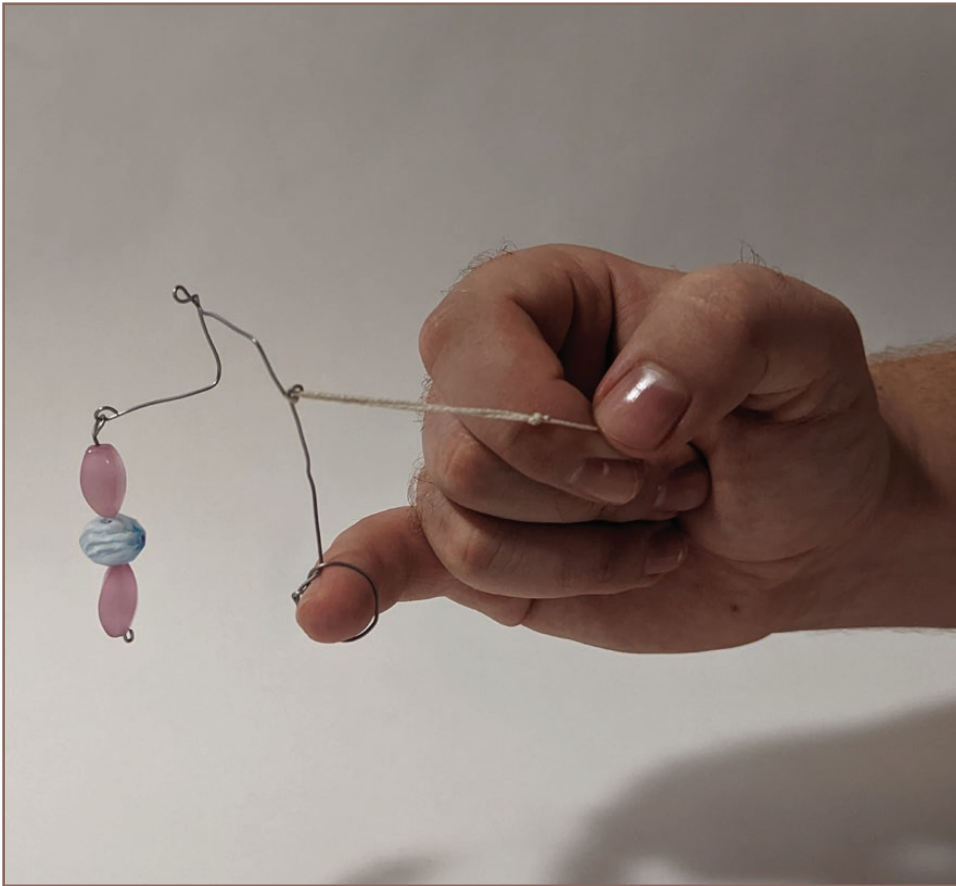


Figure 2.7 : Balanced Reciprocity
Sketch model fabricated with stainless steel wire, glass beads, and cotton string. This model requires human intervention to function as intended.

In her Essay, *Telling is Listening*, Ursula Le Guin explains that face-to-face conversations should be viewed as the primary form of discourse¹²⁰. She describes the importance of this verbal form of conversation as an event which only occurs once¹²¹. According to her theory, “[t]he voice creates a sphere around it, which includes all its hearers: an intimate sphere or area, limited in both space and time.”¹²² The event of a conversation can be described as a theoretical space; not necessarily as a space that contains voices or spoken concepts, but rather voices and spoken concepts themselves as a space¹²³. When picturing this space theorized by LeGuin during a conversational exchange, one can imagine a sphere void of identity, transparent and containing only the contents of the discussion. The first model, as seen in Figure 2.8, demonstrates the presented concept of a voice as a sphere. It depicts a clear sphere which represents the words spoken without considering their contextual basis or the background from which they originate. It thus represents a sphere void of identity. This second model re-imagines the sphere as presented by Le Guin in her writings, but considers the cultural and linguistic influences of the theoretical speaker. Through teachings from local Anishinaabe Elders, it can be understood that all aspects of creation are interconnected and depend on each other to maintain a balance. When listening to knowledge keepers explain vocabulary from their traditional tongue, it can be enlightening to understand the multiple dimensions of the language’s direct interconnectivity with the land and its stories. This second model, as seen in Figure 2.9, depicts a sphere imagined with softly adorned pictographic references to sacred teachings, images of familiar landscapes, interconnective elements and presenting a particular point of view. It represents a space of language enriched with the identity and influences of its theoretical speaker. Its coloured transparency helps demonstrate the lens through which this individual experiences the world around them.

120 Ursula K. Le Guin, “Telling Is Listening,” *Essay*, In *The Wave in the Mind: Talks and Essays on the Writer, the Reader, and the Imagination*, 197-199, Boston: Shambhala, 2004.

121 Ursula K. Le Guin, *Telling Is Listening*, 197-199

122 Ursula K. Le Guin, *Telling Is Listening*, 197-199

123 Ursula K. Le Guin, *Telling Is Listening*, 197-199



Figure 2.8 : Void Voice Sphere
This sketch model is created using a plastic dome and a chiseled dowel.



Figure 2.9 : Contextualized Voice Sphere
This sketch model is created with a homemade food colouring and glue paint, a thifted fish bowl, and a chiseled dowel.

Chapter 3



Chapter 3 - Let's Talk Learning

Language influences individual and collective perceptions of the world. As Heidi Bohaker expresses: “[t]ogether, language and narratives of origin shape social practices and construct relationships between people and landscapes.”¹²⁴ When approaching language as a learning process, it’s important to understand its origin and engrained contextual relationships. Considering that the Ojibwe language and its teachings are deeply rooted in the land, it is necessary to adjust its teaching and learning environment to reflect said connection to the land. Through various discussions with members of educational bodies surrounding the Atikameksheng Anishnawbek First Nation, the available Indigenous language resources are outlined. The identified distribution of these resources has influenced the scale at which the role of architectural intervention is explored and evaluated within this thesis.

124 Heidi Bohaker, “Anishinaabe Toodaims,” in *Gathering Places : Aboriginal and Fur Trade Histories*, Carolyn Podruchny, Laura L. Peers, and Laura L. (Laura Lynn), Peers Vancouver: UBC Press, 2010.

3.1 - N'Swakamok

When gathering the resources made available to a particular community it is important to first consider the resources made available by said community. In addition to a recent Atikameksheng Band outpost established in Sudbury's downtown core, friendship centers are known to act as a beacon and a safe space for Indigenous peoples in urban contexts. The Ontario Federation of Indigenous Friendship Centres (OFIFC) is a network of friendship centers that offer Indigenous culture-based services in every large metropolitan. These independently run centers serve the needs of inner-city Indigenous communities by providing recreational, social and cultural programs. The N'Swakamok Friendship Center (See Figure 3.0) acts as a hub for the urban Indigenous population residing in and around the Greater City of Sudbury, including the Atikameksheng Anishnawbek First Nation.

The N'Swakamok Friendship Center provides access to culture-centered services in Sudbury's downtown core. These services include but are not limited to language learning programs, mental health resources and periodically hosted cultural events¹²⁵. According to conversations with an educational coordinator at CSC Nouvelon, the french catholic school board of the region, the community resources provided by N'Swakamok are a priceless support tool for school board members¹²⁶. These resources facilitate not only the empowerment of students self-identifying as Métis, First Nation, or Inuk within the public school setting, but they also facilitate the proper exposure of non-Indigenous students to the current realities faced by their surrounding Indigenous communities and peers.¹²⁷ The N'Swakamok Friendship Center represents from an architectural perspective, a

125 "Friendship Centre Programs," N'Swakamok Native Friendship Centre, accessed December 2, 2022, <http://www.nfcsudbury.org/Programs.htm>.

126 Viviane Valentim, Art and Indigenous education Coordinator at the CSC Nouvelon, conversation with author, November 2022

127 Valentim, conversation with author, November 2022



Figure 3.0 : N'Swakamok Friendship Center Located in Sudbury, ON

place of belonging and representation. The Friendship Center is adorned with iconographic symbolism and demonstrates through its bold facade cultural pride and strength.

Affiliated with the Rainbow District School Board, the N'Swakamok Friendship Center is also home to the Alternative Native School. Kelly-Lee Assinewe, the education director of this alternative school, describes it as a free space that encourages students from varying ages and backgrounds to earn a high school diploma at their own pace. This school model allows students to come and go as they choose while earning credits and certifications. According to Assinewe, this alternative approach to education is best suited for an open-concept space that provides a supervised learning environment while promoting group work. She states that within this space, visual vocabulary elements are often displayed in order to assist students with a particular interest in language learning to expand their vocabulary. Currently, these visual elements are updated and

changed on a weekly basis. That being said, Kelly-Lee explains that for a space serving a particular community, it would be beneficial for visual elements to be adaptable by the users, allowing the distinct user community to properly represent themselves.

3.2 - Sudbury District Schools

When a community works together to foster a language learning environment, they allow students access to ongoing verbal practice and thus improve their retention of vocabulary and concepts¹²⁸. In these instances of community-based teaching, the strategic introduction of intentional learning tools in and around the built environment provide the potential for architecture to play a positive role in the ongoing learning process. From conversations with professionals within the public education system, it can be stated that there is a lack of Indigenous language teaching and learning resources for children from primary to high school in and around the Atikameksheng Community. Although this comes as no surprise due to the limited population of available language speakers, it does demonstrate that language revitalization should be a priority.

The Greater Sudbury District School Boards, encompass educational institutions surrounding the Atikameksheng community with locations as far north as Red Deer and as south as M'Chigeeng on Manitoulin Island.¹²⁹ In the Sudbury District, there are four School Boards: two French boards, the CSC Nouvelon and the CSPGNO, and two English boards, the Rainbow District School Board and the Sudbury Catholic District School Board¹³⁰ (see Figure 3.1). The Sudbury Catholic District School Board shows no interest in participating in voluntary research dialogue. However, fruitful participation is documented within this body of work with representatives from the three remaining school boards.

According to conversations held with representatives, the CSPGNO and the CSC Nouvelon school boards implement cultural mediators

128 Valentim, conversation with author, November 2022

129 "School Boards in Ontario (2016)," Arcgis.com, accessed December 18, 2022, <https://www.arcgis.com/apps/View/index.html?appid=3efaa58188484e0686055f8c9206565a>.

130 "School Boards in Ontario (2016)," Arcgis.com, accessed December 18, 2022,

within their institutions that are tasked with promoting individual and collective cultural engagement within the classroom environment.¹³¹ Within the French schools, these roles promote Franco-Ontarien identity and in recent years, attempt to instill pride in self-identifying First Nation, Inuit and Métis students¹³². At the level of the school board, these mediators not only provide resources and support to teachers but are also tasked with securing various resources and community speakers to enrich the student experience. According to statements made by a teacher within the Nouvelon school board, cultural mediators are assigned in each school and engage the entire school community. By integrating notions of collective and individual pride within daily activities these mediators normalize self-expression, empathy and understanding among students¹³³. These “engagement agents”, as they are sometimes called, utilize physical activities as well as visual cues scattered throughout schools to spark connections between students and elements presented to them. These cues are often iconographic representations and/or visual elements associated with concepts or ideas that subconsciously ask students to reflect on presented material and concepts, whether it be academic or cultural.¹³⁴ These visual cues encourage students to develop their critical thinking skills and enrich their vocabulary.

Even though a language can be considered as an “Official” language of Canada, due to its minority status it is constantly battling to be heard and properly represented.¹³⁵ In a world so washed with the English language, it is crucial to acknowledge that ongoing resources

131 Valentim, conversation with author, November 2022

132 Stephane Paquette, Cultural Facilitator at the CSPGNO, email exchange with author, November 2022

133 Stephanie Oddy, Teacher for CSC Nouvelon, phone conversation with author, November 2022

134 Kimberly Tyson, “Marzano’s 9 Effective Instructional Strategies,” TeachThought, January 16, 2022, <https://www.teachthought.com/learning/instructional-strategies/?fbclid=IwAR08X37Sitceo50pvFrwvazKuaXDz2os2FRcnVpvAaynHox7yWkpj109GXl>. Reference resource provided by Teacher at the CSC Nouvelon during conversation with author

135 Arwa Ahmed, “Franco-Ontarians: A Formidable Force to Be Reckoned With,” Government of Canada, August 8, 2022, <https://www.noslangues-ourlanguages.gc.ca/en/blogue-blog/franco-ontarienne-franco-ontarians-eng>.

and efforts are required to maintain and strengthen one's tongue, especially if it stands as a second or tertiary language. According to representatives from both the CSPGNO and CSC Nouvelon, Indigenous resources and teaching materials are widely available in English, but are scarcely made available in French. This factor contributes gravely to the difficulty of providing Indigenous language learning opportunities within French Schools. Both school boards acknowledge that it is not acceptable to ask local First Nation community members that are fluent in their traditional tongue and willing to teach to learn yet another colonial language in order to be accepted within French education spaces. Although it has been proposed to provide Indigenous language learning in an English setting within Francophone schools, it is currently not considered due to the current struggles of the French language in schools. According to a Nouvelon education coordinator, since the switch to the virtual classroom, a large shift has occurred in students' proficiency to communicate in the French language¹³⁶. Notably, the cultural mediator of Indigenous education for the CSPGNO states that there has been an overall decline in the quality of French spoken between students and teachers within the school environment. Although virtual classroom settings may have played a role in the past few years, the unfortunate decline pre-dates the pandemic classroom setting. Language learning, especially in the case of minority languages such as French and Ojibwe, relies on community efforts rather than isolated individual contributions. "It's an inherent concept in language - this idea that the individual is only a minuscule particle of the wondrous whole organism."¹³⁷ The learning of language is a lifelong commitment and it is important to provide access to resources that treat it as such. This presented reality identifies that any tool or architectural intervention applied in support of the language learning process must be able to offer continued support throughout its lifecycle and the lifetime of its users.

136 Valentim, conversation with author, November 2022

137 Patricia M. Ningewance, *Survival Ojibwe: Learning Conversational Ojibwe in Thirty Lessons* (2021), 5

3.3 - Post-Secondary Institutions

Given the ongoing process of language learning, this body of work deems it crucial to evaluate the post-secondary resources available in and around the Sudbury area for the learning of languages Indigenous to Turtle Island. Within the Greater Sudbury Area, there are 3 post-secondary institutions: Laurentian University, Collège Boréal, and Cambrian College (see Figure 3.2). Through their independent Indigenous Centers, these institutions offer support and resources to their student bodies. Although all from separate institutions, these centers have a partnered agreement with each other and with the N'Swakamok Friendship Center to provide Indigenous students access to post-secondary education via varying pathways. This agreement, known as the N'Swakamok Education Initiative, is intended to increase the effectiveness of provided cultural resources by encouraging the sharing of resources and transferable credits between institutions, and by working in partnership with community service providers to foster a “physical and culturally safe learning and living environment”.¹³⁸ Although providing access via alternative academic pathways, this agreement seldomly impacts the day-to-day experience of Indigenous students occupying post-secondary campuses in Sudbury. Sudbury’s post-secondary institutions offer programs at varying degrees in both French and English. According to the documentation provided by the Centre Louis-Riel, the Indigenous student center at Collège Boréal, their resources and services are only available in the French language.¹³⁹ This post-secondary institution provides several programs in a French learning environment and stands as a beacon of francophone education in Ontario¹⁴⁰. It bridges the gap for francophone students studying in the Sudbury area who are unable to access cultural services in the French language at the level

138 “N'Swakamok Education Initiative,” N'Swakamok Education Initiative, December 2, 2020, <https://nswakamokeducation.ca/>.

139 “Centre Louis-Riel,” Collège Boréal, accessed March 15, 2023, <https://www.collegeboreal.ca/en/services/support/centre-louis-riel>.

140 “Home,” Collège Boréal, accessed March 15, 2023, <https://www.collegeboreal.ca/en/>.



of their public schools. Although the center doesn't offer Indigenous language courses, its on-site elder provides students with guidance and shares with them key teachings.¹⁴¹

Figure 3.1 : Post Secondary Institutions in Sudbury

Laurentian University alludes to providing culturally inclusive resources in both French and English.¹⁴² That being said, given the scarce human resources locally available in the French language,¹⁴³ it provides its services mostly in English. The Indigenous student center at the university is working to strengthen relationships fostered with local Indigenous communities, notably Atikameksheng Anishnawbek First Nation. This Indigenous Student Center is home to a large ceremonial and gathering space, known as the round room. This room

141 Eric Dupuis, Indigenous education manager, College Boreal, conversation with author, March 2023

142 "Indigenous Sharing and Learning Centre," Laurentian University, accessed March 10, 2023, <https://laurentian.ca/indigenous-programs/islc>. & "Centre Autochtone De Partage Et D'apprentissage," Université Laurentienne, accessed March 10, 2023, <https://laurentienne.ca/programmes-autochtones/>

143 Valentim, conversation with author, November 2022

allows students and community members to host cultural events, and workshops; allowing them to gather in a dedicated and relevant environment.¹⁴⁴ This space has been home to various Ojibwe language workshops and represents a uniting environment students can utilize to access weekly collaborative language learning exercises.¹⁴⁵ Students have access to a small variety of dedicated cultural spaces (see Figure). The wigwam constructed in Founders Square, as well as the Sacred Arbor situated near the University of Sudbury provide students access to exterior sacred spaces and periodically tended sacred fires. Situated deep within the Laurentian University campus, the University of Sudbury presents itself as a post-secondary institution “By, For and With” the francophone and Indigenous populations. As of 2021, the institution is partnered with Kenjgewin Teg, an Indigenous educational institution situated in M’Chigeeng First Nation on Manitoulin Island, to provide access to education “By, For and With” the Indigenous population of Northeastern Ontario. In the coming years, the University of Sudbury Campus is envisioned to become home to programming presented by Kenjgewin Teg.¹⁴⁶

The Wabnode Center at Cambrian College provides students access to culturally relevant support and mentorship. According to a current student at Cambrian, the center fosters an atmosphere of respect and acceptance. The hallway in proximity to the center’s main office is designated as a smudging space and allows students to destress and recenter themselves. “It’s great, we [the students] just have to follow the small turtles installed on the floor across campus to find our way

144 “Indigenous Sharing and Learning Centre,” Laurentian University, accessed March 10, 2023, <https://laurentian.ca/indigenous-programs/islc>.

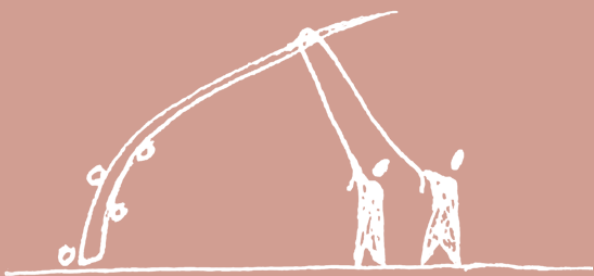
145 “Indigenous Student Affairs Staff and Services,” Laurentian University, accessed March 10, 2023, https://laurentian.ca/indigenous-student-affairs/staff?_gl=1%2Alw51v%2Aga%2AODM3NjY3NTQxLjE1ODc2MTM0MTI.%2A_ga_5EXFLRFCD5%2AMTY30TM1NzIxMC42Ny4xLjE2NzkzNTc3NzIuNTIuMC4w.

146 “The University of Sudbury and Kenjgewin Teg Announce Agreement ‘by, for and with’ Indigenous Peoples,” University of Sudbury | Université de Sudbury, October 7, 2021, <https://www.usudbury.ca/en/news/current-news/1932-university-of-sudbury-and-kenjgewin-teg-announces-agreement-by-for-and-with-indigenous-peoples>.

to the Wabnode center.”¹⁴⁷ This center encourages students to consult elders and provides a safe, judgment-free study space. The center prides itself on sharing teachings, ceremonies, and traditions with its student body. It is evident that having access to a comfortable and safe learning environment can have a direct impact on a student’s ability to effectively absorb taught materials. A feat especially true when it comes to language, a subject matter which draws its teachings from its speakers’ surroundings. The Indigenous student centers found within Sudbury’s post-secondary institutions may have very different spatial qualities and relationships, but they all create a sense of belonging for identifying indigenous-minded students. These spaces, specific to these groups have sparked a sense of community within the schools and act as a “home” space for many students

¹⁴⁷ Anonymous, Cambrian College student, phone conversation with author, March 2023

Chapter 4



Chapter 4: Making Dialogue

Given the inherent relationship between language, culture and identity, it is impossible to conduct a meaningful interpretation of the Ojibwe language without engaging in conversations with speakers of this language. This thesis not only explores how to interpret language spatially, but also utilizes architecture as a medium to foster comfort, belonging, and cultural pride. Undoubtedly, architecture can serve as a means through which designers express themselves and their creative freedoms. But as a medium, how can it be used to impact revitalization efforts in Indigenous communities? This question has been discussed through incredible conversations with representatives of the Atikameksheng Anishnawbek First Nation, notably with the Chief of the community, Chief Craig Nootchtai, as well as with a respected Elder, Art Petahtegoose. The following section presents knowledge gained from these consultations.

It is crucial to note within the telling of this community's story when the Indian Act started playing a role. This policy forbidding the practice of cultural traditions in Indigenous communities was enacted in 1876.¹⁴⁹ It was then amended in 1951 to provide the Government of Canada jurisdiction over the welfare of children.¹⁵⁰

4.1 - Atikameksheng Anishnawbek First Nation

Although there exists an overarching presence of policies and laws bent on destroying the distinctiveness of Indigenous Peoples across the stolen territory of Turtle Island,¹⁴⁸ every Indigenous Nation and community has their own story to tell, and the community of Atikameksheng Anishnawbek First Nation is no exception. Although its story predates the formation of Canada as a country, the following telling begins in 1867. In the first official Government of Canada Census conducted in 1867, 9 distinct First Nation settlements were identified across the Greater Sudbury Area. These communities were established along bodies of water and were identified by the latter: Vermillion Lake, Vermillion River, Lake Nepahwin, Wanapitei Lake, Wanapitei River, Upper Lake Panache, Round Lake, Between Whitefish Lake and Makada Lake, and Between Whitefish Lake and Wameki Lake.¹⁴⁹

The Atikameksheng community settlement established at the meeting point of Simon, Whitefish and Mud Lake was designed in 1953. The Government of Canada implemented it in the Greater Sudbury area in 1955. Utilizing its power over Indian status and the welfare of First Nation children, the Government of Canada grouped the 9 First Nation settlements scattered across the Greater Sudbury area into one implemented suburban community. Although most were displaced as a result of this grouping, various individuals chose to step away from their inherent right to status and their culture to pursue a life away from regulated inhabitation. Within the remaining members of the grouping above, colonial infrastructures and systems were therefore constructed. The newly established suburban

148 "Indigenous Peoples," The Canadian Encyclopedia, accessed October 19, 2022, <https://www.thecanadianencyclopedia.ca/en/timeline/first-nations>.

149 Art Petahtegoose, Elder, and education and social services councillor for Atikameksheng Anishnawbek First Nation, Face to face conversation with author, February 2023

150 Erin Hanson, "The Indian Act," indigenousfoundations, accessed September 18, 2022, https://indigenousfoundations.web.arts.ubc.ca/the_indian_act/.

151 Hanson, "The Indian Act," indigenousfoundations

infrastructure layout brought neighbours physically closer together but created a separation between family units. The suburban setting of the community created a sharp separation between the people and the land. Now converged into a single First Nation community, in proximity to road access, the inhabitants of what is federally known as Whitefish Lake First Nation Reservation Number 6 were easily accessible by Government Agents. Due to the enforcement of Indian Act policies by these agents, objects of ceremony were hidden from visitors. These objects were used in secret mini-ceremonies that were held deep in the woods in small intimate groups. As time went on, most objects of ceremony were destroyed and returned to the land because they were deemed unsafe to possess. According to the story's telling, certain members of the community quietly rebelled against these rules by keeping their sacred objects and pursuing cultural practices in secluded wooded areas. These acts of rebellion allowed for the survival of traditional knowledge and the later revitalization of cultural practices. Although ceremonies could be conducted in secrecy, the Indian Act also forbade the practice of traditional language. Out of fear of having their children taken from them, community members learned to communicate with agents, and eventually with each other, in the English language. This imposed shift in the communication dynamics changed the fundamental relationships within the community. As a result of strict restrictions imposed on all aspects of daily life within the community, neighbours started to keep to themselves.¹⁵²

Despite extreme restrictions on their cultural expression and identity, the Atikameksheng Anishnawbek First Nation remained independent and secured access to clean drinking water in the 1960s. This access was sustained until about 2001 through a centralized well system. However, due to population growth, the water table was continuously depleted and was no longer able to sustainably

152 Art Petahtegoose, Face to face conversation with author, February 2023

meet the inhabitants' needs. After roughly 40 years of self-sufficient clean water supply, Atikameksheng sparked an agreement with the township of Walden to utilize water supply from the city's system. This agreement ensured the continued access of clean and potable water for the residents of the reservation.¹⁵³

The area established in 1955 by the Government of Canada did not consider eventual growth and expansion. It did not consider the impact its location would have on individual access to land, and on the land itself. The community of Atikameksheng, as it can be seen today, is an expanded version of the 1955 design.¹⁵⁴ (See Figure 4.0) As gathered through the conversations with Chief Craig Nootchtai, as well as with Elder Petahtegoose, there is an imminent need for the further expansion of the residential fabric. In its current state, the land use is too densely populated with houses. This dense residential population has over-saturated the soils and risks heavily polluting the nearby waterways with scarcely filtered septic waste.¹⁵⁵ Although there is presently no exact master plan for the expansion, it is a strong topic of discussion on the Council's agenda. At this time, despite the lack of a detailed specified route, a general direction of expansion has been established.¹⁵⁶ (See Figure 4.0) The expansion intends to expand the residential and commercial sectors of the community, all while creating a cultural hub in what will become the center of the inhabited area. This proposed expansion further intends to introduce various outposts within its reservation space, but also in and around the edges of its traditional territory. These outposts aspire to serve as feasting, fasting and ceremonial retreat spaces where community members can return to cultural practices and strengthen their connection with the land.¹⁵⁷

153 Art Petahtegoose, Face to face conversation with author, February 2023

154 Art Petahtegoose, Face to face conversation with author, February 2023

155 Art Petahtegoose, Face to face conversation with author, February 2023

156 Craig Nootchtai, Chief of Atikameksheng Anishnawbek First Nation, teleconference conversation with author, February 2023

157 Craig Nootchtai, teleconference conversation with author, February 2023



Figure 4.0 : Atikameksheng's Growth

This map demonstrates the residential zones within the Atikameksheng Anishnawbek First Nation and demonstrates the growth from 1955 - 2023.

4.2 - Building Precedents

According to First Nation teachings, clear and intentional actions are required when properly harvesting and utilizing natural materials. Fully centered around reciprocity and gratitude, these actions forge a sacred, and spiritual relationship between the body and the materials in use. By considering the natural medium's characteristics, traditional Anishinaabe architecture stands as an incredibly sustainable example of construction. The practice respects seasonally dependent harvesting – a process of acquiring construction materials that must span, at minimum, a full seasonal cycle. This cyclical period allows the intended site to be fully understood by its user and allows them to experience the site during all 13 moon cycles and through a full solar rotation.

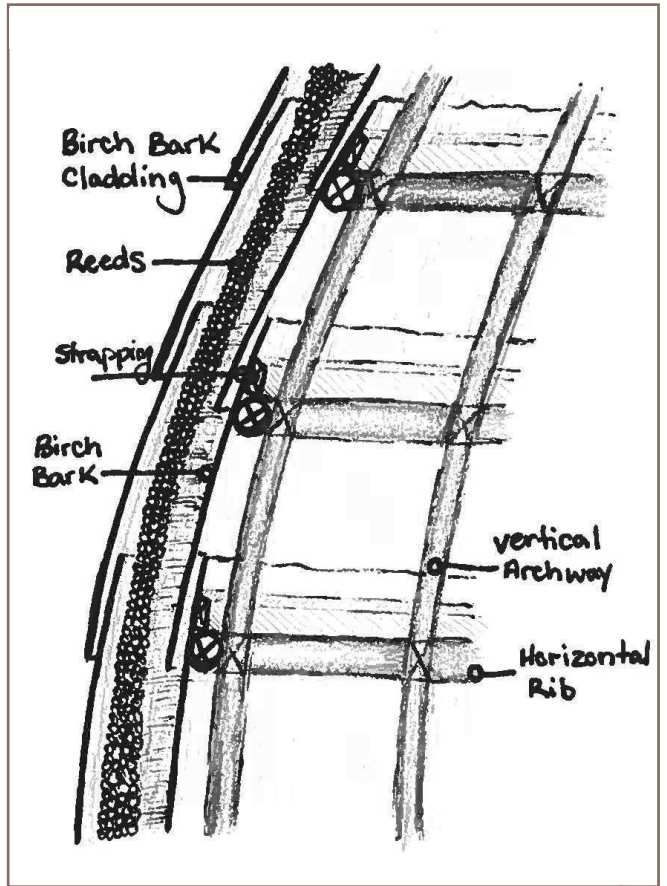
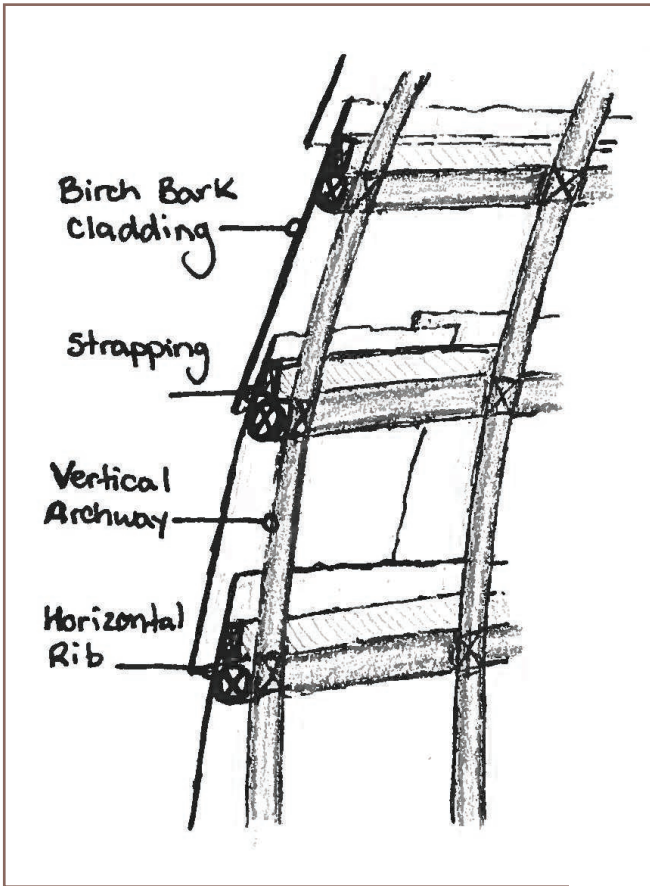
Figure 4.1 : Single layered Birch Bark Cladding

Figure 4.2 : Double layered Birch Bark Cladding

Figure 4.3 : Skeleton of the 2018 Laurentian University Wigwam

Before the establishment of the suburban settlement, the Atikameksheng population resided in longhouses. The longhouses were bentwood structures, often housing entire family units, e.g. parents, children, and grandparents. This typology utilizes hardwood saplings inserted vertically into the ground, bent and bound into archways to create a tunnel-like shelter.¹⁵⁸ These vertical archways are then strengthened with horizontally bent saplings, and fastened together with spruce roots to create a frame. Two variations of the longhouse's cladding composition are traditionally utilized. The first is used to cover temporary shelters often used for hunting homes. It consists of a single layer of birch bark applied over the arched bent wood structure in a shingle-like pattern (see Figure 4.1). This single layer of birch bark is usually removed, stacked, and pressed flat when the shelter is not in use so that its materials can be re-installed for the next moment of use. The second system is used on more permanent structures, such as homes. This cladding composition consists of two layers of birch bark separated by a layer of dried

158 Art Petahtegoose, Face to face conversation with author, February 2023



reed bundles. (See Figure 4.2) The reeds, harvested in late August, act as an insulated barrier for moderating the Great Lakes climate. When striving to achieve a sustainable practice of construction and design, it is important to consider the life cycle of materials. In the case of the more permanent cladding application, every element has an expected lifespan and can easily be replaced and recycled. Within this cladding system, the exterior birch bark layer is expected to be replaced every 2-3 years in order to maintain its water-shedding capabilities. The internal birch bark as well as the insulating reeds, if maintained in a dry state, are replaced every 5-6 years. Although expected to outlive the cladding system by several years, even the main structure's arched ribs allow for the replacement of individual components.¹⁵⁹

In 2018, a group of students from the McEwen School of Architecture had the opportunity to participate in the construction of a wigwam on the Laurentian University Main Campus. (See Figure 4.3) This experience allowed them to see firsthand the important considerations of material use, harvesting and life cycle. Being a partnered endeavour between Laurentian University and Atikameksheng Anishnawbek First Nation, Elder Art Petahtegoose shared with the students' various teachings while highlighting the importance of intentions during the construction of the sacred space. Silver maples harvested from Atikameksheng's reservation space were utilized for the construction due to their rapid growth and inherent straight grain. The students learned the importance of orientation and the strength of building as a community.

When constructing a sacred First Nation space, spiritual doorways must respect the cardinal directions. To welcome the sunrise - the Creator's gift of every new day, the entrance must always face east. The presence of doorways in the west, north and south allows spirits

159 Art Petahtegoose, Face to face conversation with author, February 2023

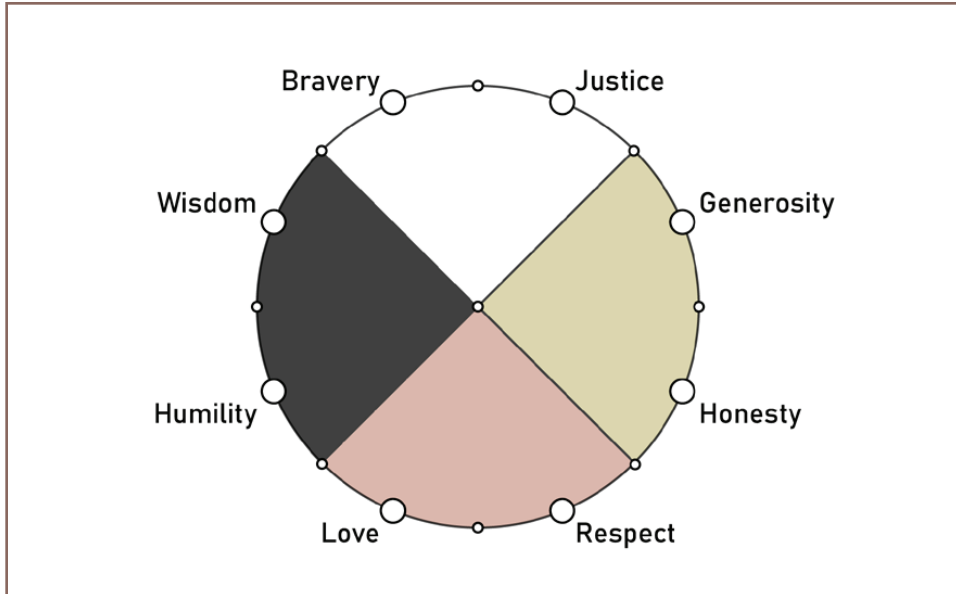


Figure 4.4 : Atikameksheng Medicine Wheel Teachings

to flow through the space and interact with ceremonial objects. The Wigwam acts as a sacred space open to all, it demonstrates its relationship to the sun's axis as well as its dialogue with the moon cycles through the teachings of the turtle. Like the shell of a turtle, the orientation of vernacular First Nation structures allows mundane spaces to act as calendars and sundials. During a discussion with Elder Petahtegoose, he stated that he tends to the exterior sacred hearth for the community. He described this hearth and the way it was meticulously laid out to provide for its users spiritual guidance and reminders of the instructions to live the good life. As described, the hearth is situated in the center of a large circle. This circle, created by 16 vertical poles inserted into the ground, is laid out so that it respects the cardinal directions and displays the 7 grandfather teachings – in the case of Atikameksheng, the community resonates with 8 grandfather teachings. These teachings are specifically placed along the circle to remind male and female members of their responsibilities within the community and throughout this good life. Entering from the east, the southern-to-western arc represents the female, whereas the northern-to-western arc represents the male.¹⁶⁰ (See Figure 4.4)

4.3 - Language as link

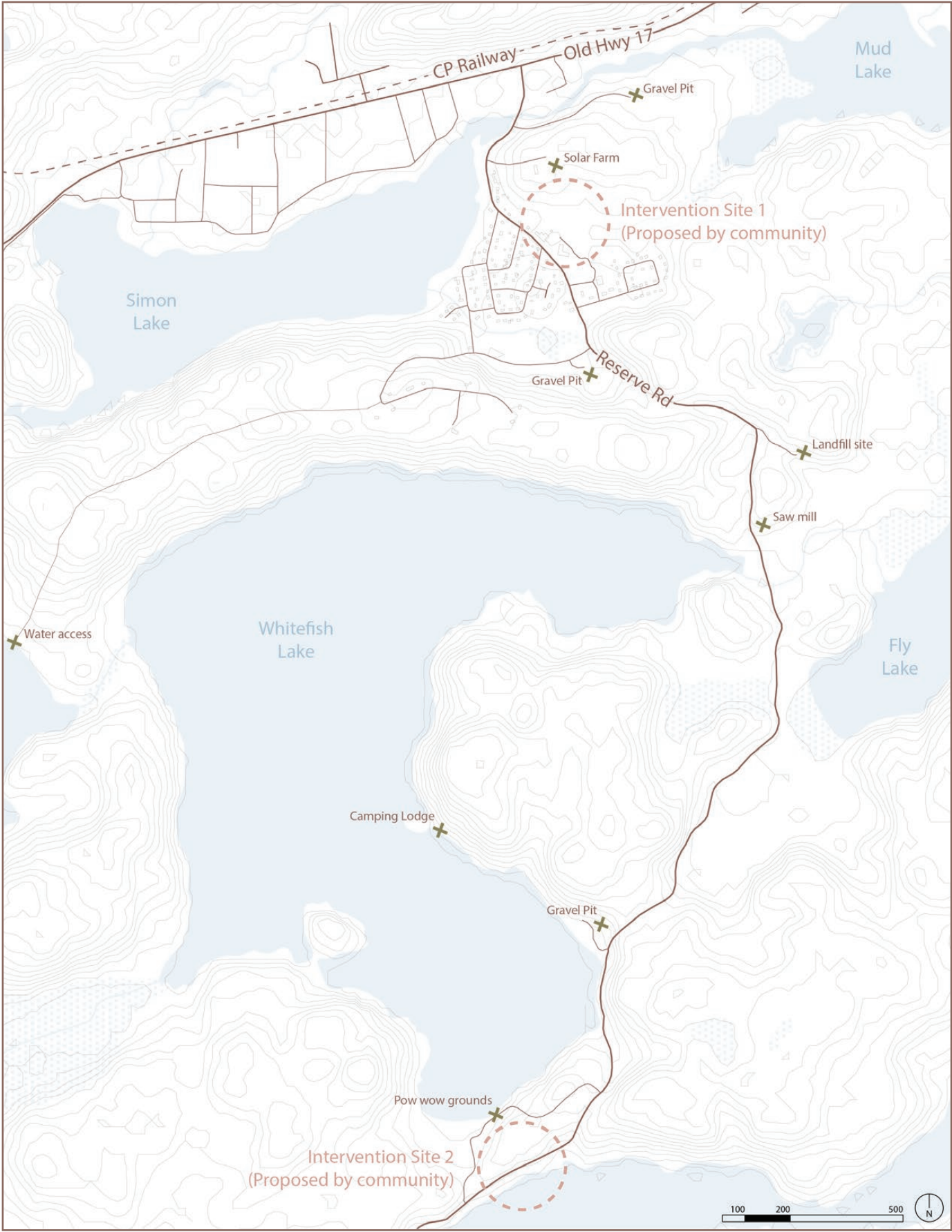
The concept of a dedicated language learning space has been heavily discussed during every consultation. Although this learning center is intended to revitalize language proficiency within the First Nation, the community members desire that the learning of language be returned to the home. After all, as stated by Chief Nootchtai, “Language is learnt in a family environment, not in a classroom.” A dedicated language learning center would provide a space in which the Aatzokay group could gather. This group, whose name means “coming together to talk”, is a cluster of community members that meet to practice their Anishinaabemowin skills. Capable of housing existing committees such as the Aatzokay, the language learning center could serve as a beacon for language learning excellence, even once mundane learning is returned to the household. This center could be utilized as a space where teachers of the language deepen their understanding and enrich their relationship with other speakers.

According to Chief Nootchtai, the conceptualization of a dedicated language learning center could easily be proposed in the eventual heart of the community’s cultural resource hub. In conjunction with the community’s intended expansion, this proposed language center should incorporate and consider the establishment of smaller-scale nodes that could be built in proximity to the eventual community outposts.¹⁶¹ (See Figure 4.5) To best meet the community’s aspirations, the overall assembly of spaces dedicated to language should be specific to Atikameksheng but remain welcoming to visiting members from external communities. This center should be designed so that it may serve as a flex space utilized to host regional Band Council meetings and celebratory assemblies.

Figure 4.5 : Identified Sites in the Atikameksheng Reservation

This map illustrates two scales that could be considered within the Atikameksheng Reservation Space. The first site proposes a main language learning center capable of providing support at the scale of the community. The second, proposes a language space complimenting the communities grassroots initiatives. This second site reflects in scale the proposed outposts to be constructed in and around the communities traditional territory.

¹⁶¹ Craig Nootchtai, teleconference conversation with author, February 2023



Considering the action-based structure of the Ojibwe language, discussions quickly centered themselves on the act of learning. These exchanges sought to investigate what individuals might be doing while practicing and learning the language. Detailed within the Atikameksheng Comprehensive Community Plan (ACCP) is the community's interest to re-learn traditional crafts and land-based techniques. Given that Anishinaabemowin is more spiritual than technical, it is culture. The learning of the language should absolutely be paired with teachings and traditional craftsmanship. (See Figure 4.6) Given the language's inherent relationship with culture and the sacred connotations associated with the act of teaching, a well-vented sacred fire hearth is necessary for the space to function as it should. The imagined learning spaces should be flexible and adaptable, capable of supporting: the butchering of wild game and fish, the tanning of hides, the practice of trapping, and the hosting of community celebrations. The design of these spaces should furthermore investigate the possibility of supporting the needs of funerary ceremonies. This four-day ceremonial procession requires a kitchen, proximity to a sacred fire and sleeping arrangements.¹⁶²

162 Craig Nootchtai, teleconference conversation with author, February 2023



Figure 4.6 : Language as Culture

Chapter 5



Chapter 5: Language as Space

The architectural proposal outlined within this thesis document is entirely different from its first conceived possibility. By trusting and following the process of community consultation, the proposed intervention embodies architecture, not as a solution but rather as a tool providing a community with the ability to reinforce its own strength and identity. As an architectural designer, it too often feels necessary to immediately take on the role of master planner and establish spatial relationships, programmatic elements, as well as materialities. This body of work critiques the role of master planning and urges designers to pursue grounded and collaborative designs so communities can speak for themselves. Produced through a Western academic institution, the process of this thesis endeavour outlines not only a collaborative effort to explore possibilities but also a designer's journey to unlearn taught ways of thinking and relearn their role as an ally to Indigenous Peoples. Through conversations with Atikameksheng Chief and Council members, it quickly became evident that a space entirely dedicated to language learning could only properly serve the community's needs if it were fully detailed through participatory design with community members. The architectural proposal of this thesis is intended to question and explore the role of the built environment as a tool to support the language learning process. This proposal represents one of many steps necessary for the full and just design development of a language learning space for the Atikameksheng Anishnawbek First Nation community.

5.1 - Speaking Structure

The architectural proposal outlines a structure typology that draws inspiration from traditional building techniques, sustainable material use and interprets the Ojibwe language learning process. This structure is conceived to provide the Atikameksheng Anishnawbek First Nation community with the ability to create and adapt its sequencing to meet the scales of various outlined needs and desires. Utilizing local land-based materials and embedded teachings, the structure is a tool capable of supporting the community's cultural revitalization and language learning process throughout its life cycle.

Given the initial intention to produce a fully detailed schematic design, case studies of ecological learning centers have been completed to understand the spatial relationships and qualities of contemporary learning spaces having a direct visual, physical or programmatic connection to nature. These studies are outlined diagrammatically in Appendix A to serve as resources for the future development of the proposed project. These case studies analyze the spatial relationships of multi-functional circulation spaces, group gathering areas and self-directed learning opportunities, however, they lack a regionally specific and rooted approach to Indigenous teachings.

Through the presented research process of this booklet, readers have come to understand the core contributions of language and culture to the idea of identity and belonging. Although the correlation between these concepts is explored in depth, seldom is their important relation to the sense of safety and home discussed. Taking cues from key aspects outlined by Craig Nootchtai, aspects of local existing and soon-to-be constructed structural languages are embodied to spark a communal sense of familiarity within this newly proposed architectural typology. The presented typology is not intended to reinvent the identity of the community, rather it embodies aspects of the community's traditional and contemporary built language to further root its presence and



strengthen the identity of its inhabitants. As seen in Figure 5.0, there exists within the Atikameksheng Reservation a contemporary structural language present in community projects that utilizes full round logs in a truss configuration. This round log truss language can be seen in the structure of the proposed outdoor rink roof and of the constructed sacred arbour detailed by LaPointe Architects¹⁶³. The use of natural materials and familiar building forms allows for the typology to embody a sense of home.

Figure 5.0 : Atikameksheng's Existing Structural Language

Given the rooted nature of the Ojibwe language and its teachings, the explored architectural interpretation aims to root itself within its context and landscape. The tree selected to be utilized within the round log truss sequencing of the proposal is the poplar. Site analysis revealed that this tree species is very present in and around the Atikameksheng Reservations space with a consistent diameter size. The trees observed on site (See Figure 5.1) have a diameter of between 4" to 6" and are fairly straight in stature. Given their consistent sizing

163 "AAFN - Fire Arbour." Lapointe architects. Accessed February 15, 2023. <https://www.lapointe-arch.com/aafn-fire-arbour>.
& "AAFN - Outdoor Ice Rink." Lapointe architects. Accessed February 15, 2023. <https://www.lapointe-arch.com/aafn-outdoor-ice-rink>.



RECTILINEAR STRUCTURE WITH CURVED ELEMENTS

EXTERIOR AND INTERIOR SPACES SHARING COMMON LANGUAGE AND PROXIMITIES.

INT. INT. EXT.

SQUARED STRUCTURE WITH LAYERED CURVED ELEMENTS

(BUT DOES IT REALLY ADD TO EXPERIENCE?) BENT ROOF SYSTEM

CORNER = CONCERN FOR TARP SHELTER

LOG WALL?

DOES THIS ADD ANY KIND OF BENEFIT? AN EXPERIENCE?

REPEATED VERTICAL ELEMENTS

POTENTIAL USE OF TRUSS LANGUAGE

BENT WOOD TYPOLOGY ALLOWING TARP COVER WITH TENSILE HOLD ELEMENT

Richard Kio

and straight stature, these trees offer the opportunity to produce a consistent and repeatable structural element. Given the proposal's intended role as a learning tool, this repeatability allows teachings to be engrained within its creation and allows the making process to become in itself a sacred process¹⁶⁴.

The exploration of a bentwood structure alludes to the vernacular constructions of the area. This structural language is intended to spark a sense of familiarity and comfort for its users by reminiscing the bentwood structures used in traditional homes¹⁶⁵. As demonstrated through the sketches in Figure 5.2, multiple iterations of repeatable, bentwood and truss-like structures have been considered to find the

164 William Morin, Knowledge Carrier and Anishinaabe Artist, Conversation with the author, February 2023.

165 Art Petahtegoose, Elder, and education and social services councillor for Atikameksheng Anishnawbek First Nation, Face to face conversation with author, February 2023

Figure 5.1 : Identical Poplar Trees Observed on Site

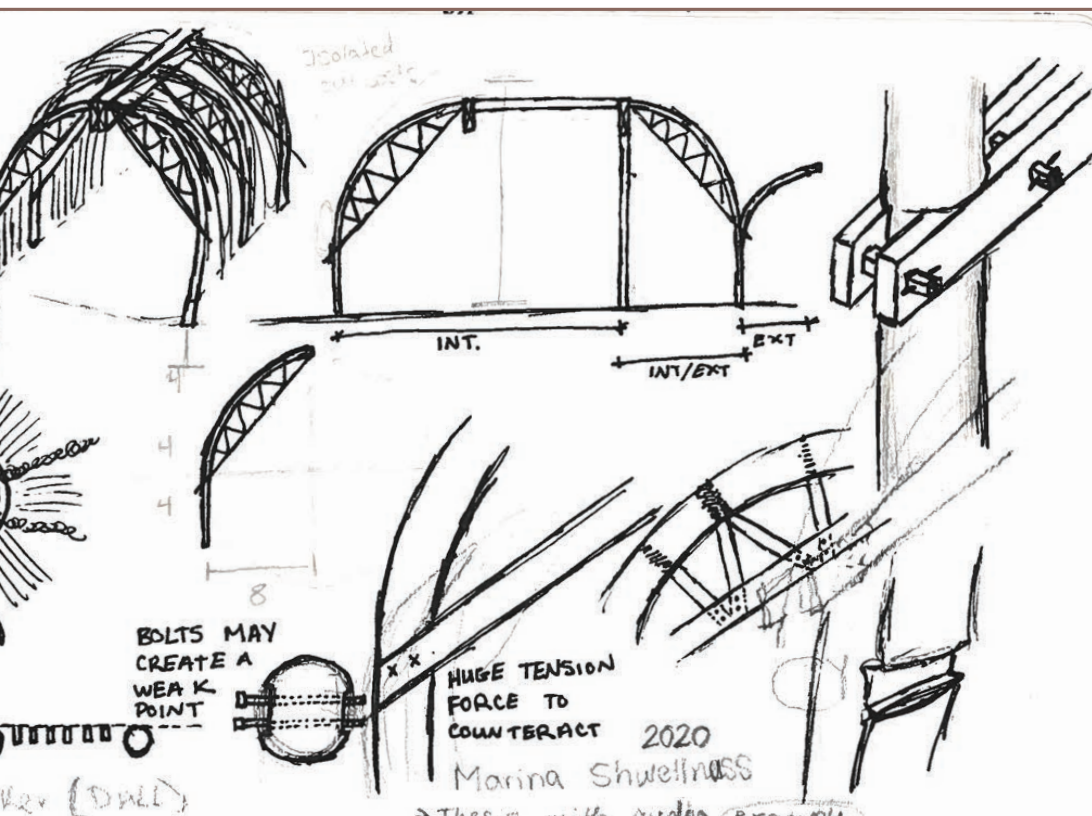


Figure 5.2 : Design Process Sketches

best-suited form to meet the Atikameksheng needs and desires. The proposal envisions a system that could be constructed in isolated locations serving as a land-based healing, teaching and retreat outpost¹⁶⁶. These outposts as described by the Atikameksheng Chief should be conceived to act as temporary shelters capable of supporting a multitude of activities. To reduce the chances of vandalism, damage and undesired inhabitation, the isolated constructions are imagined to remain as skeletal frames only to be covered with birch bark, hide or tarps by users when sheltered space is desired¹⁶⁷. Through the sketching of various iterations, it is deemed necessary that a pairing of rectilinear and curvilinear forms be used to reference the truss typology of the community. Considering the need for the proposed frame to accommodate temporary cladding, removed

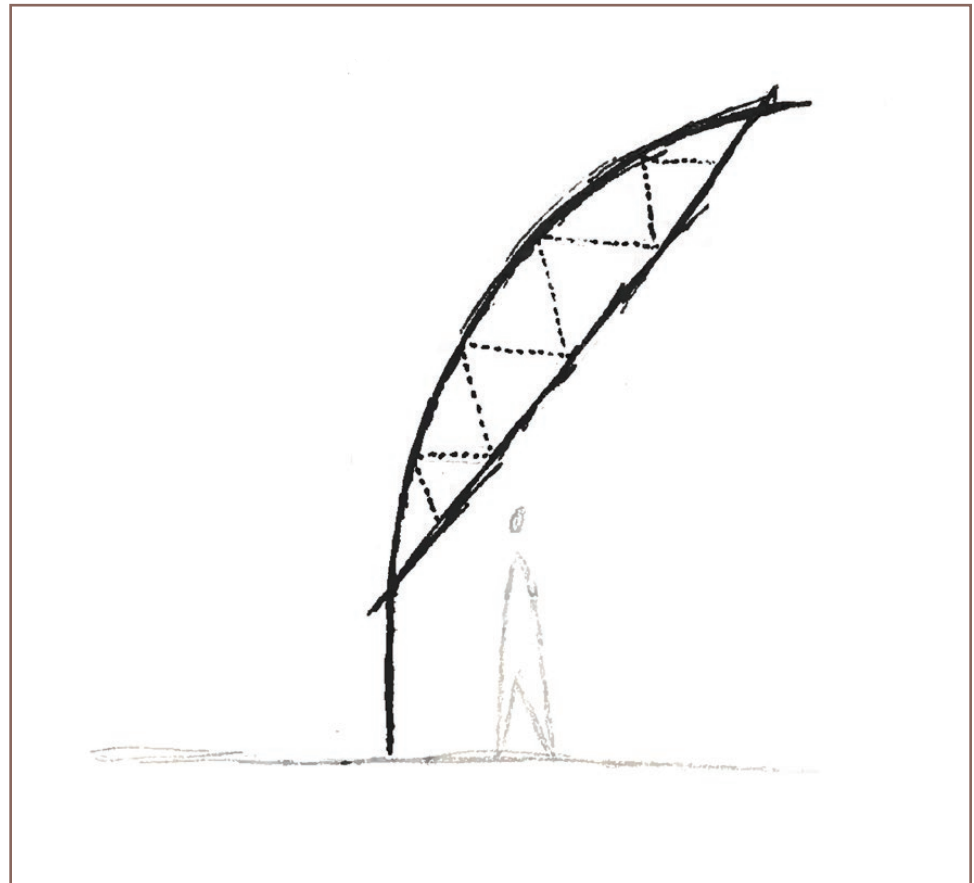


Figure 5.3 : Proposed Bentwood Structural Typology

¹⁶⁶ Craig Nootchtai, Chief of Atikameksheng Anishnawbek First Nation, teleconference conversation with author, February 2023

¹⁶⁷ William Morin, Conversation with the author, February 2023.

The proposed archway, as seen in Figure 5.3, compiles the research findings and embodies the design considerations outlined. This form features a bent tree as its main structural component and, to ensure proper repeatability utilizes a rectilinear member to maintain its consistent bent form. The distilled nature of this form ensures that it can be repeated and adapted to meet the spatial needs of the Atikameksheng community. The bentwood exterior ensures that no snag points exist to damage temporary cladding while it is being installed or removed.

When considering the process of construction as a supporting mechanism for language learning, repetition and adaptability become important aspects to consider. The use of such a repeatable and distinct shape encourages the in-depth integration of teachings and allows students at various levels of language proficiency to benefit from the process. As described through various conversations, building is a sacred process. When completed consciously, it encompasses numerous sacred and ceremonial acts; including but not limited to the harvest of trees, the debarking of trees, the manipulation of material, the erection of structures (as seen in Figure 5.4) and the intentional orientation of spaces. Traditional buildings offer invaluable teaching and learning opportunities throughout their construction process, it is thus important to acknowledge that the proposed typology doesn't aim to undermine these teachings. The proposal provides an opportunity for these rooted teachings to be applied on a larger construction scale. The use of sustainable land-based practices and materials should be more widely considered within contemporary construction. The presented proposal offers the opportunity for the community of Atikameksheng to create flexible community gathering and teaching spaces ingrained with their distinct identity and embedded with teachings.

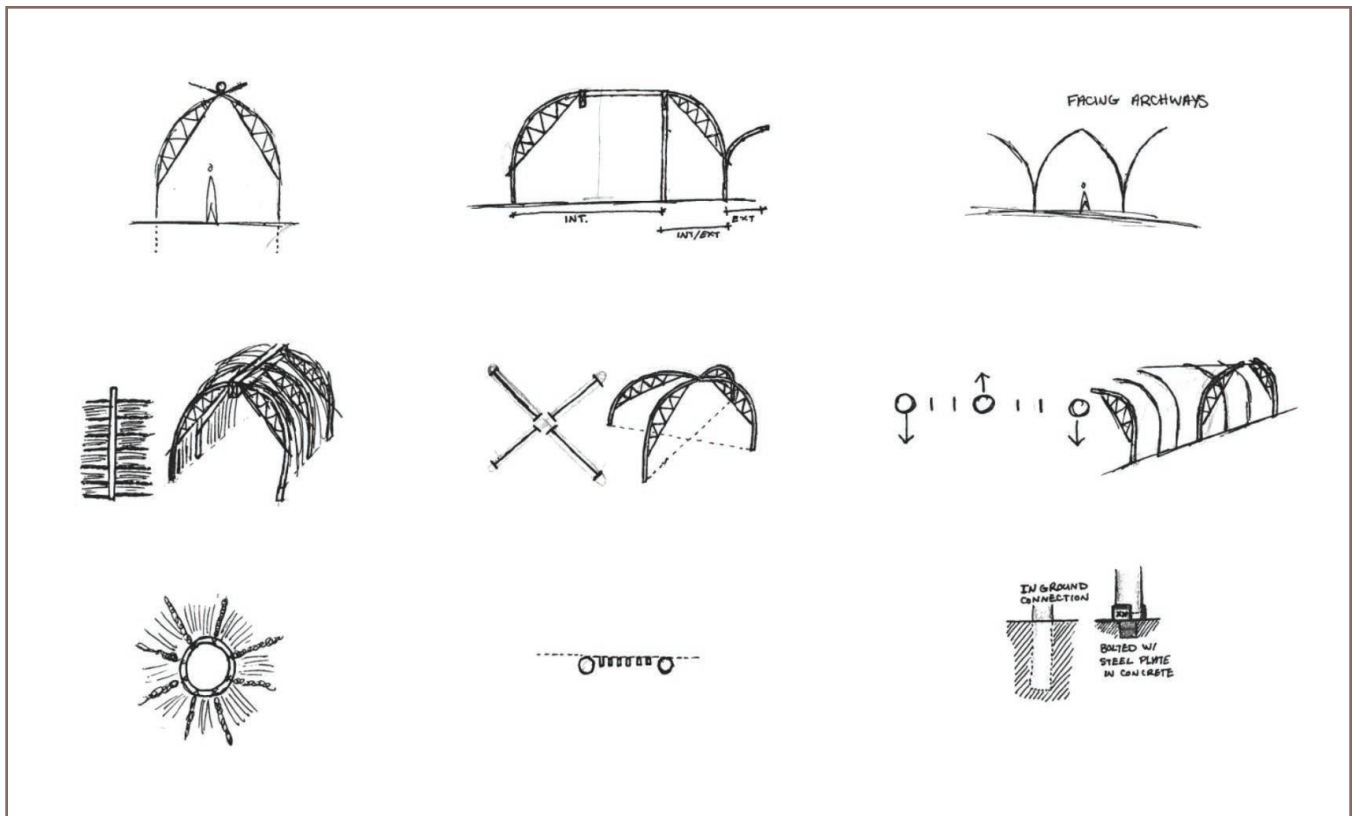


To further promote the integration of language learning into the architectural process, it is proposed that Ojibwe words be carved into the structure. These integrated words should represent vocabulary or teachings important to the user community. Although Ojibwe is an oral-based culture, the written words could serve as a living language archive for the endangered language. This living language has multiple dialects, regional pronunciations and varied spellings¹⁶⁸, but this written repository could allow the Atikameksheng community to protect and proudly display their specific vocabulary. Making reference to helpful language retention strategies identified within the public schools as well as in the alternative native school, these carved words could serve as a visual cue encouraging users to reflect upon teachings and the good life.

Figure 5.4 : Construction as Ceremony

This vignette depicts the offering of tobacco performed before structure is inserted into the ground to be erected.

Figure 5.5 : Arched Configurations



168 "Nishnaabemwin Odawa & Eastern Ojibwe Language Resources," Nishnaabemwin, June 2020, <https://nishnaabemwin.algonquianlanguages.ca/>.

The proposed architectural typology is conceived so that it may be configured into various spatial sequences, as seen in Figure 5.5. The arch form combines traditional and contemporary architectural languages and can thus support numerous arrangements. This form is capable of being used as a closed system. It can be organized into configurations including but not limited to a tube-like shelter, a large 'X' braced space, or a flat articulated wall component. The distilled nature of the form also allows it to be combined with external structural systems. Present within the outlined possibilities of Figure 5.5, the arched typology can be seen combined with a post and beam structural language. In this structural configuration, the arch could act as a post-member, thus increasing the inhabitable area with a shorter beam span.

The collaged vignettes in Figures 5.6 and 5.7 demonstrate an imagined portrayal of the architectural typology utilized within the closed system tube structure as well as the combined post and beam structure. By exploring a structural typology fully constructible in-house by the community without providing a rigid configuration scheme, the architectural typology outlined at this stage of design provides the Atikameksheng Anishnawbek First Nation community with the independent capability to adapt and modify the proposed sequencing to meet their needs.

Figure 5.6 : Skeletal Structure
This Vignette depicts the skeletal frame of the tube configuration being covered with a temporary cladding.



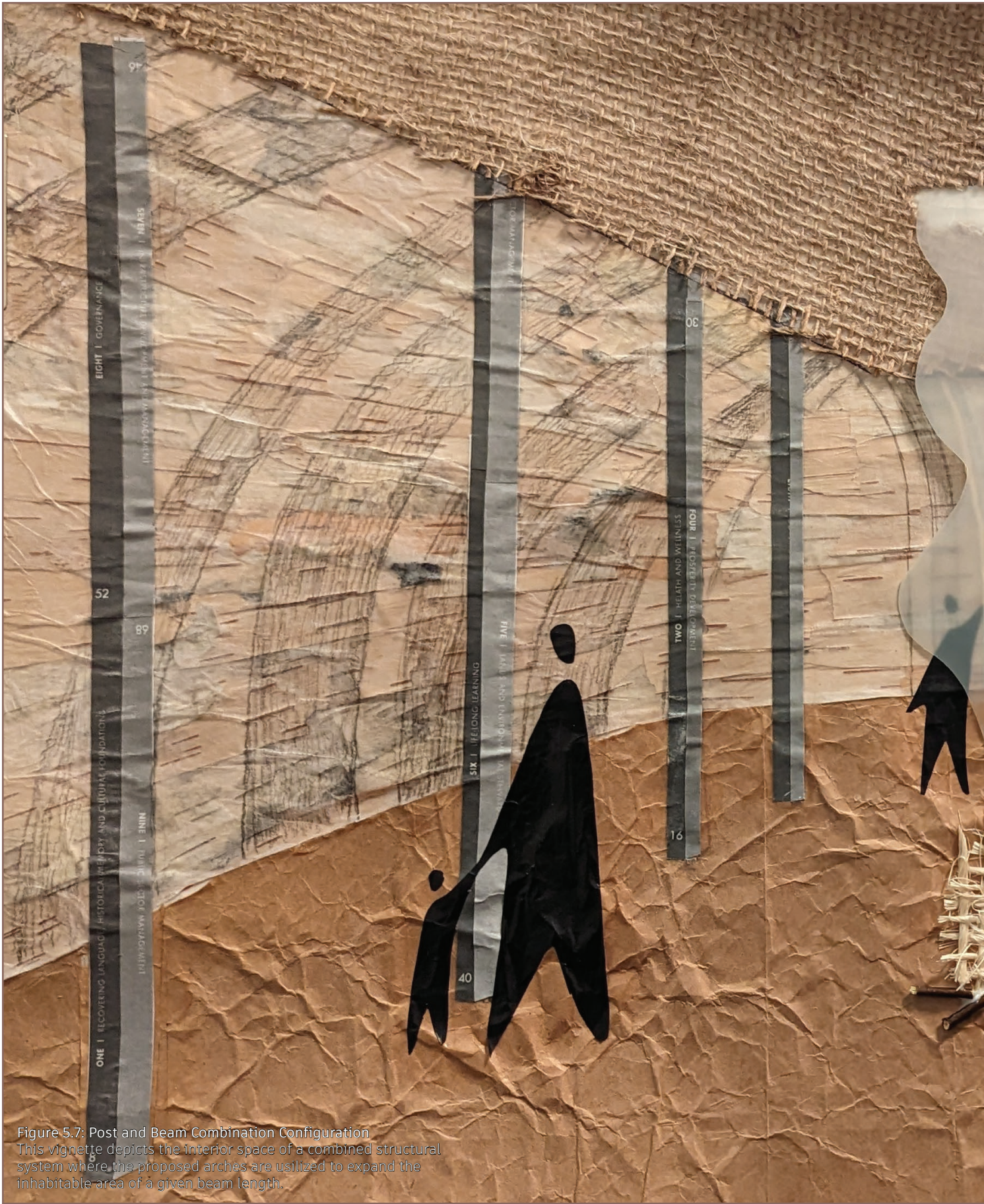


Figure 5.7: Post and Beam Combination Configuration
This vignette depicts the interior space of a combined structural system where the proposed arches are utilized to expand the inhabitable area of a given beam length.



...images will also take so long to

...cess of healing from



...ects remain ongoing

Abuse at the schools was widespread

...sions which neither began nor ended with residential schools. Generations of children were frequently taken from their home communities, far from their families, and placed in residential schools. They were dressed in uniforms, they were

...many d... residential institutions. The historic, intergenerational

...and collective oppression

...of their identities

...oppressive government policies - attempts to

...of residential schools was to

...the form of land disputes, over-incarceration, lack of housing, child

...of the schools were sorely underfunded, and

...the churches and European settlers brought

...to alienate them from their families

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...their own civilization was the pinnacle of human achievement. They interpreted the socio-cul

...were ignorant, savage, and—like children—in need of guidance. They felt the need to “civilize

...marginalization and violence against Indigenous

...of the implementation and subsequent changes to the Indian Act, the mass removal of Indigenous

...of transmitted personal trauma

...of transmitted personal trauma

...of transmitted personal trauma

5.2 - Making tests

Given that the current thesis explores the role of architecture and its construction process as a tool to support Ojibwe language learning, it is important that the making process of the proposed architectural interventions be fully understood. The following section details the trials and errors explored through the research creation of a full-scale bent wood arch. The creation of this full-scale exploration consciously utilizes materials that are readily available. The materials utilized are either naturally sourced or can be sourced locally. The tools selected for this creation process are accessible; meaning that the tools used are either known to be owned by the Atikameksheng community or can inexpensively be acquired locally. Furthermore, it is important to identify that no specialty tools are used to ensure that any purchased or utilized tools can serve a multitude of purposes. Taking into account the Atikameksheng community's access to a sawmill, the following section utilizes dimensional lumber liberally to achieve desired goals.

Pushing the rooted nature of the proposed architectural typology, the material exploration begins with the acquisition of trees. The trees, as seen in Figure 5.8, mimic the trees identified on the Atikameksheng Reservation Space along Reservation Road. These five poplar trees, harvested on Manitoulin Island, have a base diameter of roughly 4 1/2" and have been cut at a workable length of approximately 18'. They provide the core material in the explorations to follow.

In order to ensure a clear understanding of the bending capabilities of this tree material, two heavy-duty saw horses are utilized to support the trees at a workable height. This working configuration, as seen in Figure 5.9, consists of two saw horses placed either near the end of the tree member or at its thirds to accommodate various bending techniques. Identified through conversations with skilled craftsmen and through research, there are three main wood bending techniques. Given the rigid nature of a 4" to 6" tree, these bending techniques,



Figure 5.8 : Material for Exploration

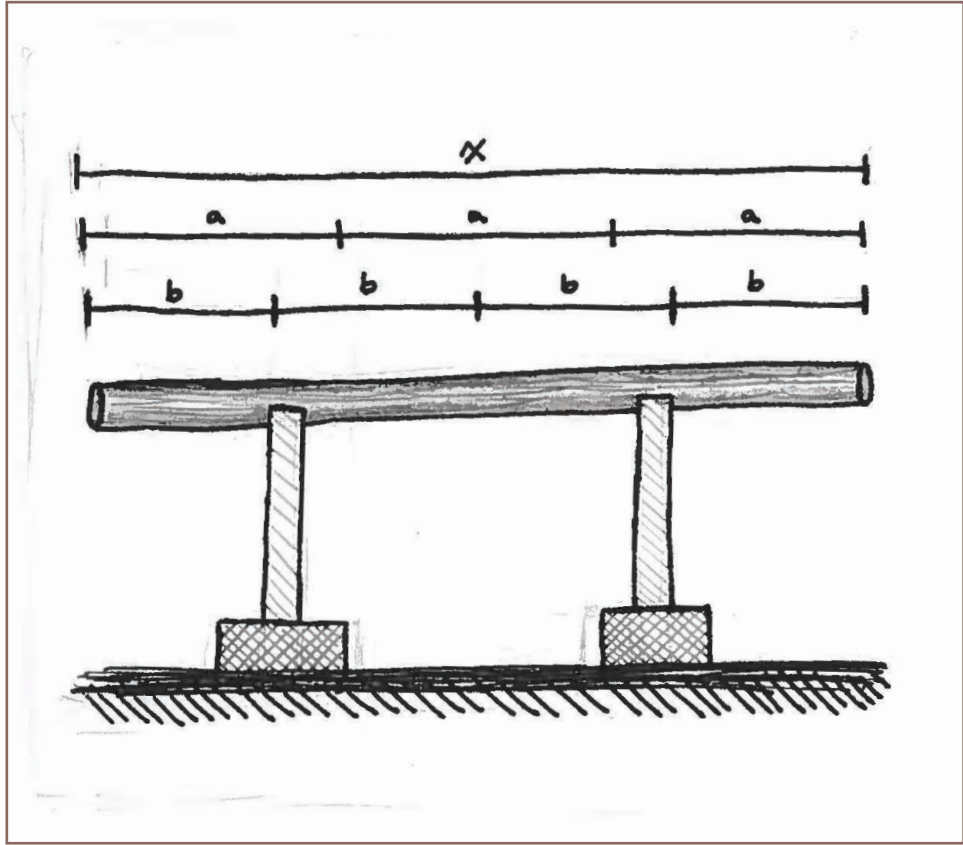


Figure 5.9 : Saw Horse Tree Bending Configurations

Common Wood Bending Techniques

1 - Lamination



2 - Kerf Cuts



3 - Steam



as demonstrated in Figure 5.10, are essential to achieve the desired arched form.

Through the rapid analysis of the presented bending techniques, it is quickly determined that the use of lamination for bending the tree would be unable to produce results as desired. This technique is achieved by bending thin slices of material and glueing them together into a desired form. Cutting the tree into small strips would not only be difficult and potentially unsafe, but it also yields the loss of small amounts of material with every cut. This loss of material paired with the independent bending of each material strip would cause a distortion in the tree's form, as seen in Figure 5.11. Given the desire for the architectural typology to mimic the bent tree features of the sacred arbour and to reminisce the bentwood ribs of a wigwam, this distortion of the tree's form while bending is unacceptable. These findings conclude that the tree's form must thus either be achieved through kerf cutting or steaming.

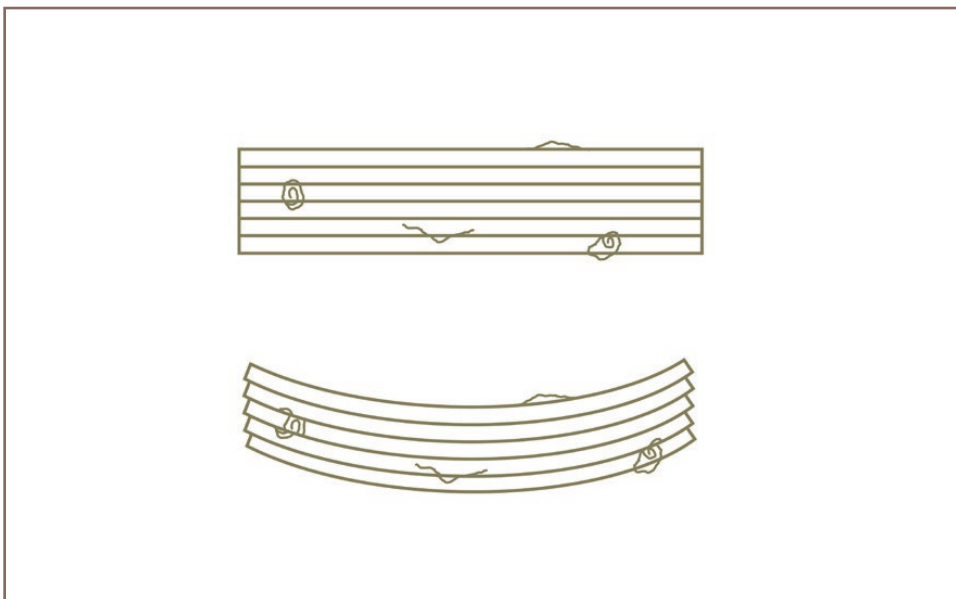


Figure 5.10: Common Wood Bending Techniques

Figure 5.11: Lamination Distortion

Due to the accessibility of the kerf-cutting technique, it is the second method analyzed and tested. This bending technique is achieved by introducing repeated cut lines into a material at the desired inner corner of the bend, as demonstrated in Figure 5.12. By removing material from this inner edge, the technique reduces the compressive forces acting upon the inner edge of the bend and relies on the tensile forces of the outer edge material to maintain structural and shape integrity. Given the promising nature of the kerf-cutting technique, 3 trials are conducted to push the capabilities of this bending method.

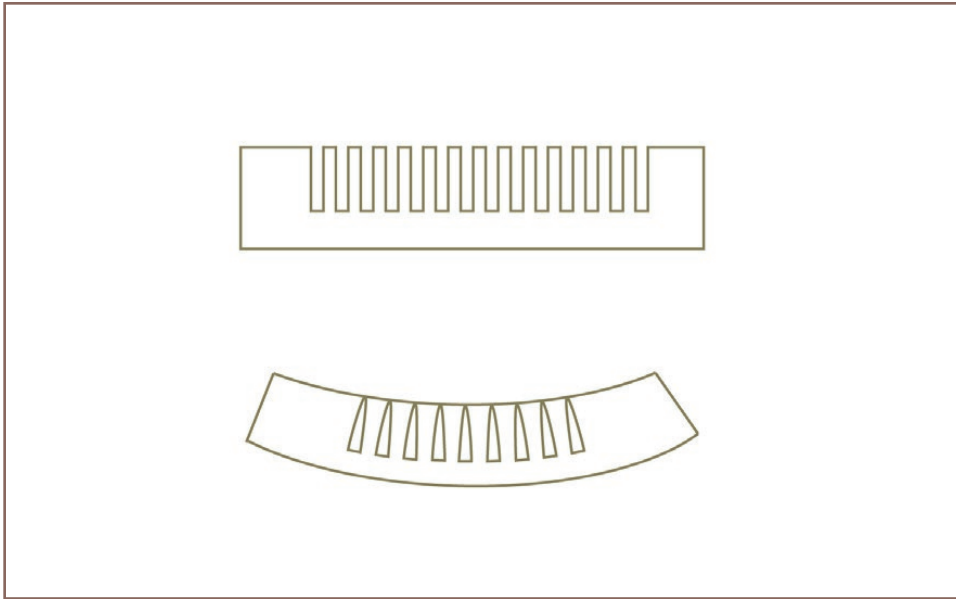


Figure 5.12 : Kerf Cutting Technique

Due to the open-ended possibilities and configurations of this method, each trial varies its cut depth and spacing to yield different results. The first test explores a very long sequence of cuts, each with identical spacing and depth. According to implied circumstances, this cut configuration is predicted to produce a shallow and gradual bend. The consistent cutting sequence, as seen in Figure 5.13, is achieved by utilizing a circular saw and running it on a built plywood form. This plywood form, as seen in Figure 5.14 resembles a “U” and is shimmed, clamped, and moved along the tree member by a pre-determined amount between each cut to ensure an even cut pattern. As a first test, this exploration of material limits is rather audacious. It utilizes the largest of the five harvested trees to quickly understand the material characteristics of a bending poplar tree. Given the size of the member being bent, saw horses need to be placed at its extremities to provide the largest amount of leverage possible. Due to the tree’s cross-cut diameter at the bending point, it is capable of supporting the full weight of a human being. Only by fastening canvas straps on either extremity of the tree and by applying an upwards force on these straps while standing on the tree (see Figure 5.16) is any movement achieved in the material. Although movement is achieved, as seen in Figure 5.15, the cut pattern did not perform as expected. Instead of producing a continuous shallow bend, the member broke. With a closer examination of the break, as seen in Figure 5.17, it is determined that due to the consistent depth of the cuts, the tensile strength of the outer edge is unable to support the long sequence of kerfs. It is also identified that the spacing between the kerf cuts is likely too large because next to no movement was achieved along the length of the cuts prior to the break.



Figure 5.13 : Kerf Cut Sequence 1

Figure 5.14 : Kerf Cut Jig 1



Figure 5.15 : Failed Bending Attempt

Figure 5.16 : Bending Kerf Cut Member 1

Figure 5.17 : Outer Edge Break



The second test explores a kerf cut with varied depths. This test features slightly closer cuts, shallow at the center of the sequence and deeper at the extremities (see Figure 5.18). Although this sequence varies its saw depth by roughly $\frac{1}{4}$ " between cuts, it utilizes the same plywood form as the first test to ensure consistency in its saw passes. The shallow center is created as a way to ensure that the outer edge break experienced in the first test is not recreated. To apply even pressure on the bending member, a small "A" frame is utilized to retain the tree's bent shape. This small frame paired with tightened ratchet straps allows the tree's fibre to rest into a bent form over an extended period of time (see Figure 5.19). The resting of these fibres allows for a deeper bend to be achieved. By applying external downward pressure and tightening the ratchet strap, as demonstrated in Figure 5.20, the tree's bend can easily be deepened. Two people applying pressure, one on either side of the A-frame, ensures that the tree is being bent evenly and reduces the risk of breakage. In order for the kerfs to align tightly, the two center cuts are deepened to reduce the compressive resistance. An abundance of glue, as seen in Figure 5.21, is applied to the now tightly aligned kerfs and is left to cure overnight under pressure with the "A" frame and straps. Unfortunately, as seen in Figure 5.22, the glue is unable to withstand the tensile force of the tree. The glue is ripped apart at the cut lines and it is unable to stop the tree from returning to its original form.



Figure 5.18 : Kerf Cut Sequence 2

Figure 5.19 : Tree Resting into the Bend

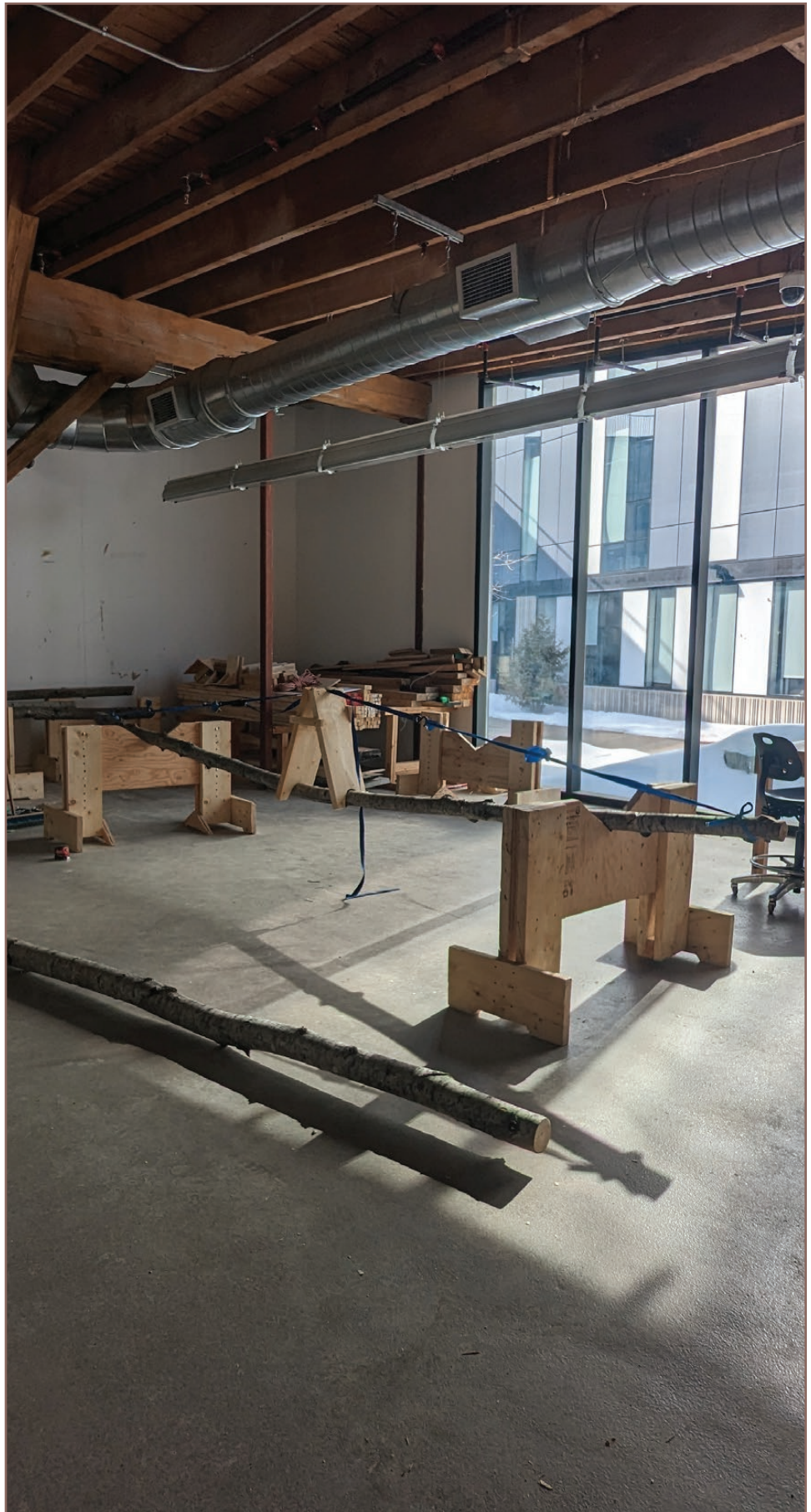


Figure 5.20 : Bending Kerf Member 2

Figure 5.21 : Liberal Glue Application

Figure 5.22 : Glue Failure 1



The third test explores a very close cut sequence in a staggered formation. This test features two cut depths. The deepest kerfs are cut just above the halfway point of the tree's cross-cut diameter, whereas the shallow cuts of the sequence penetrate roughly two-thirds of the deepest ones (See Figure 5.23). In this test, the cuts are achieved by marking the desired depth in pencil on the log and utilizing a pull saw to manually create the incisions. To provide this test with a better chance of retaining the tree's bent to shape with glue, three small kerf interventions are introduced along the tree at its quarters. These small interventions allow the member to more easily bend and yield a deeper bend than acquired with the single kerf-cut intervention in the second test. As seen in Figure 5.24, even though less force is applied to the glue because of the increased amount of surface contact within the kerf cuts, the glue still ultimately fails to retain the shape of the bent tree.

Although they each provide a new understanding of the material, the technique, and their combined limitations, the trials reveal that the kerf-cutting technique is not desirable for this tree-bending application. These tests reveal, first and foremost, that glue is unable to retain the tree's bent form at this scale. Being utilized as a structural element repeated throughout an imagined project, it is rather undesired for these trees to have incisions or cuts through their fibres. If the kerf-cutting sequence would have been successful, multiple calculations would have had to be conducted to ensure the system's structural integrity and evaluate its load capacity. These findings conclude that the tree's form must thus be achieved through steaming.



Figure 5.23 : Kerf Cut Sequence 3



Figure 5.24 : Glue Failure 2

Due to its typical application with a constructed steam box, the steaming technique (see Figure 5.25) didn't at first seem viable or accessible for the bending of 18' long trees. But by conducting research and utilizing an unconventional chamber configuration, the possibility of steaming these trees quickly becomes easy and accessible. Louis Sauzedde, an experienced shipwright, demonstrates in his tip videos that a large plastic bag can be slid over long wooden members to create a malleable steam chamber¹⁶⁹. That being said, given that a plastic steaming sleeve is a very specialty use item, this thesis opts for the use of a readily available plastic material, a vapour barrier. The vapour barrier is a crucial construction material for homes and buildings, it is thus found on every job site and can be purchased inexpensively in large quantities. This material is also often wasted between job sites. When lengths are not suitable for a full-room application, the material is often discarded for convenience. Utilizing this often discarded material for the steaming of trees offers a recycling opportunity for these job site scraps.

169 Steam Bending Wood without Using a Steambox, YouTube (Tips from a Shipwright, 2016), <https://www.youtube.com/watch?v=50uXPPt8-VI>.

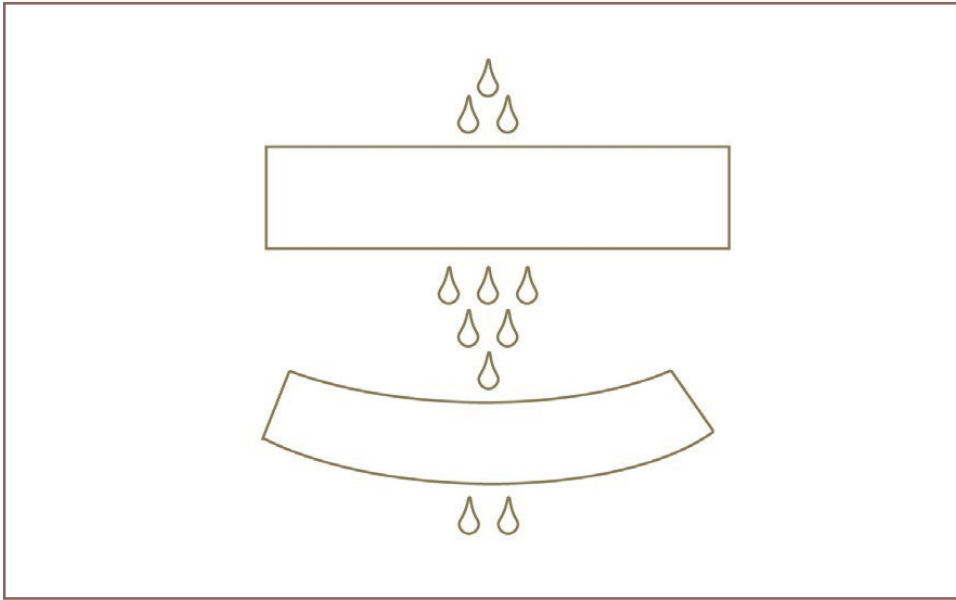


Figure 5.25 : Steaming Technique

The trees used in the following steaming tests are the same ones utilized for the kerf-cutting attempts. The kerf-cutting test trees have been cut down to isolate their cut patterns and allow the remaining 8' of tree length to be used for experimentation. The first steaming test is conducted on an upper tree portion, meaning that the 8' section of the tree has a diameter of roughly 3" to 3 1/2". This first test is the first overall test of the efficiency and viability of the vapour barrier steam chamber. It is highly recommended that the knots and any harsh edges protruding from the wooden member to be steamed be removed to ensure no holes are made in the steam chamber. As seen in Figure 5.26, the log is sealed into a vapour barrier pouch with the use of red tuck tape. This tape is extremely sticky and maintains the seal of the chamber, that being said, if any tensile force is applied to the tape during the steaming process, it risks slipping away from the plastic and unsticking. The first tree is placed in the chamber for two and a half hours to steam. As seen in Figure 5.27, the steaming chamber and tree are laid across sawhorses throughout the process. Between these saw horses is a bucket. This bucket is situated strategically where the water tends to pool at the bottom of the steam chamber. To ensure that the chamber isn't weighed down by condensation, a hole is punctured in the plastic to allow pooling water to be evacuated into the pail. A Wagner wallpaper steamer is used to fill and maintain the steam penetrating the wood in the chamber. Following the steaming process, the tree and its plastic chamber are moved. These components are clamped across a table spanning over 2 wooden blocks. As seen in Figure 5.28, the member is bent over a block spacing of roughly 8". Once slightly cooled and removed from the steam chamber, it is noticed that the bark of the tree is kinked. Upon further inspection, it is determined that the steam causes the bark to separate from the tree's core and allows for it to easily be removed. Because the tree has been cooled, the bark can only be removed in small pieces, as seen in Figure 5.29. By utilizing a hand rasp the remaining bark can easily be removed, leaving the tree with small splotches of underbark



Figure 5.26 : Tree Steaming in Sealed Vapour Barrier Chamber

Figure 5.27 :
Steaming Set-up Test 1



Figure 5.28 : Steamed Tree 1 Bent
Over 8" Block Spacer

Figure 5.29 : Bark Shavings

Figure 5.30 : Debarked Tree Bent
over Block Spacer



colouring, as seen in Figure 5.30.

Since a bend is easily achieved in the first test with a small diameter log, it is essential to test the same technique but using a full 4 1/2" diameter log section. Keeping in mind that this log has a length of only 8', the leverage to accomplish this bend is quite small in comparison to that applied during the kerf-cutting tests. The large log is placed in the same steam chamber as the first test. Because the chamber was cut open to access the first log, new tape needs to be applied periodically along the chamber walls to ensure a tight seal is once again achieved. Due to the member's larger cross-cut diameter, it is steamed for three and a half hours to ensure proper penetration and loosening of the tree's fibres. As seen in Figure 5.31, the piece is successfully bent across the table, over the 8" block alongside the first test. During the bending process, it is observed that the larger log reacted slightly differently than the small one. Although the small log was indented by the block at its bending point, the integrity of the piece was never compromised. The second log, however, has been compromised by being bent over the same single point. As seen in Figure 5.32, the second log is kinked. Due to the single point of contact to achieve the bent, the fibres at the centre of the bending point converged and created a fold in the tree's body. This bending moment in the tree provided fragile bark pieces that could easily be ripped off by hand. Note that in the kinked image, the tree's core is uniformly smooth.



Figure 5.31 : Test Trees 1 and 2 Bent over Block Spacer

Figure 5.32 : Kinked Tree from Single Point Bending Technique



After conducting two successful experiments it can be concluded that steaming is the technique of choice to achieve the desired arched form. Now understanding that the material can be manipulated and bent with the use of steam, it became time to understand the details of its debarked finish and the carving of words into the structure. Utilizing an off-cut log, a mini steam chamber is created to fully saturate the member and allow for a full debarking test to be completed. As seen in Figure 5.33, the log is uniformly debarked with the use of steam and achieves a glossy smooth finish. This newly stripped log is the perfect canvas to test carving techniques. The carved words on the right are achieved by printing the desired words on paper and taping the paper to the log where the word is to be carved. Using the varied tools tested, these words are then cut into the log through the paper to ensure the font and letter spacing remains even. A handheld dremel with a rounded bit, as seen in Figure 5.34, is used to achieve the first test. Although yielding rapid and acceptable results, the words engraved into the wood don't seem to create many shadows and will thus be lost when the wood begins to grey. The second test, as seen in Figure 5.35, is completed with an X-acto knife and yields sharp crisp edges. That being said, it is entirely un-user-friendly. This carving technique is tedious on a horizontal plane. It would be incredibly undesirable for an individual with no prior knowledge to work on a horizontal face, let alone vertically as intended on the structure. The third test features the best of both first attempts. It is achieved by utilizing a Dremel bit with square cutting edges. As seen in Figure 5.36, the use of this tool yields crisp sharp edges while maintaining rounded corners and providing a user-friendly working pace.



Figure 5.33 : Successful Steam Debarking Test

Figure 5.34 : Word Carving with Rounded Dremel Bit

When carving text with a bevelled rounded Dremel bit, the greatest advantage is that one doesn't have to be incredibly careful of the angle at which the tool is held. That being said, it is difficult to achieve deep embedded letters with this bevelled bit edge.



Figure 5.35 : Word Carving with X-acto Knife

When carving with a knife, crisp sharp edges can be achieved paired with a deep letter profile. That being said, the knife edge is unforgiving and immense patience is required to achieve a clean and even result. Note the line below the first "i"? It is an example of the unforgiving blade.





Figure 5.36 : Word Carving with Square Edge Dremel Bit
When carving with a square edged Dremel bit, it is important to be conscious of the angle at which the bit touches the wood. This bit shape is unforgiving for angled contact and will yield uneven results if not handled with care. That being said, this bit allows a crisp and deep letter profile to be achieved easily.

In order to achieve a repeatable arched bentwood shape, a wood bending form (jig) must be made. By experimenting with 1:5 models, one can usually understand how a full-scale arrangement will perform. As seen in Figure 5.37, a 1:5 model of the bending form, as well as a full bending process has been completed. By modelling the wood bending form and understanding the required configuration at 1:5, as seen in Figure 5.38, its strengths and weaknesses can be identified to minimize any dangerous failures during the full-scale bending process. This scaled model allows the anticipated utilized wood joinery to be not only visualized but tested under pressure. These tests identify that the lap joint anticipated for use doesn't properly maintain the tree's bent form because it is unable to properly counter the tensile force of the member. This model allows for various joints to be considered and allowed the testing of a dovetail joint, as seen in Figure 5.39. This joint placed in direct comparison to the lap joint is able to sustain the tree's form. Figure 5.40 depicts the retention members successfully holding the bent tree in the desired position. This 1:5 model is valuable in the way that it presents the weaknesses of the wood bending form, but invaluable in the way that it provided incredible insight into the characteristics of an under-steamed and over-stressed piece of poplar (See Figure 5.41).

The tests and sequences explored throughout this experimental phase shaped not only the final understanding of the making process but also the proposed typology. The creation of a full-scale model is intended to demonstrate the feasibility of the arches construction without the use of machines metal components and specialized fasteners. Although wood joinery, a specialized craft, is utilized to maintain the proposed configuration, it is a versatile and easily taught skill that produces bio-degradable connection possibilities.



Figure 5.37 : 1:5 Bending Form and Bending Process Model

Figure 5.38 : 1:5 Bending Form Layout (Jig)
This model allows to test the performance of the anticipated layout to be used to bend the full scale tree.

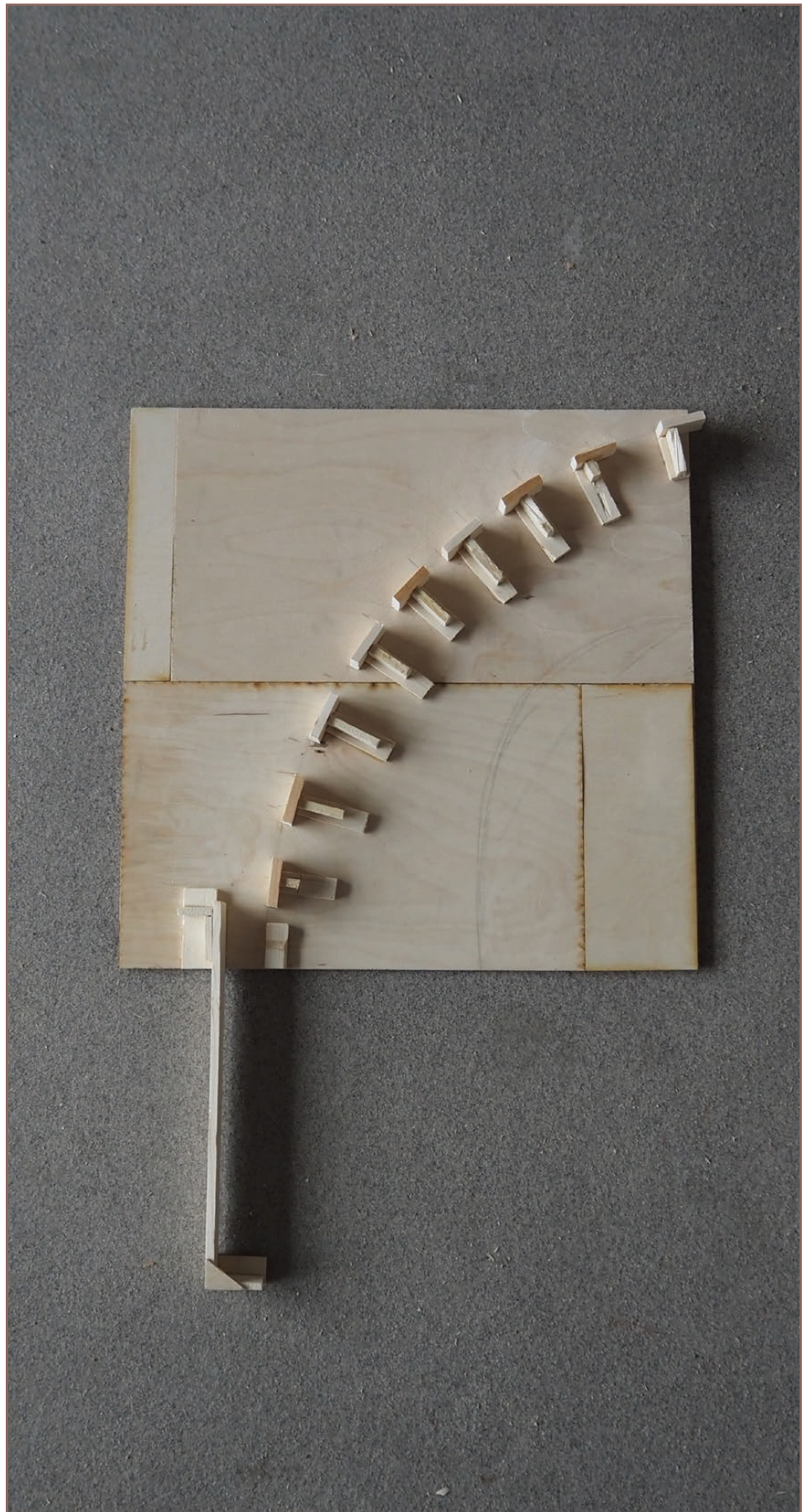
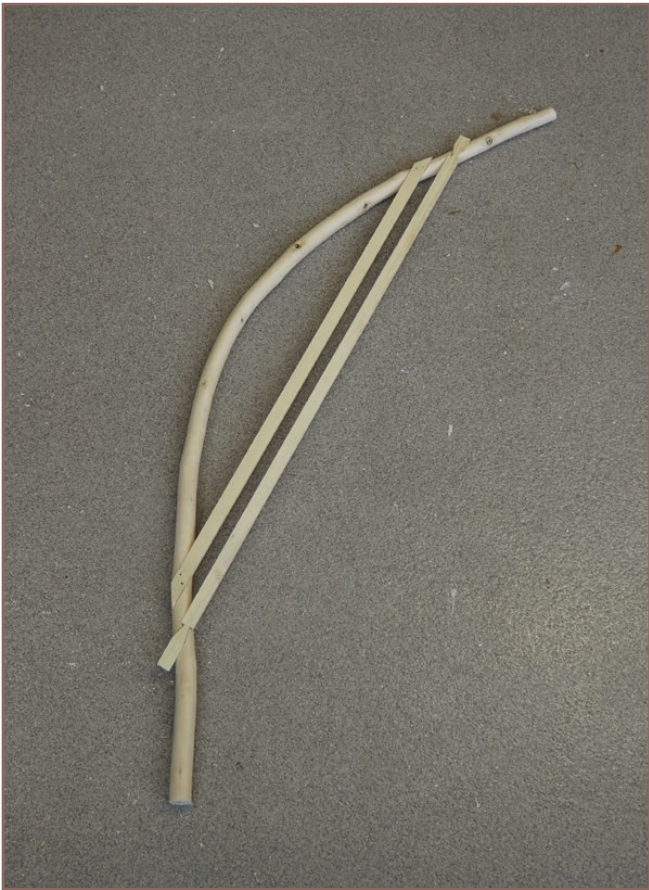


Figure 5.39 : Wood Joinery Performance Explorations

Figure 5.40 : Bent 1:5 Arch Being Retained in Shape by a Cross Member

Figure 5.41 : Material Limitation
When allowed to slightly cool, the 1:5 member became brittle and its exterior broke. The interior core of this member remained supple and malleable.



5.3 - Bending moment

The following section has been consciously formatted to decenter the English language.

As seen in Figures 5.X to 5.X, this section utilizes Ojibwe words and visual representations to highlight the process of creation. Given the verb-based structure of the Ojibwe language, actions are intentionally used to demonstrate the making and learning process.

DISCLAIMER: The Ojibwe used in this booklet is not definitive. As a living language the used terms, pronunciations, and spellings vary from region to region.

Aabjichganan

Tools / Materials



Figure 5.42 : Tools Used During Full-Scale Making Process

Aabajichigan miiniwaa onadin.

material/tool/form - and - form/shape/mold it by hand

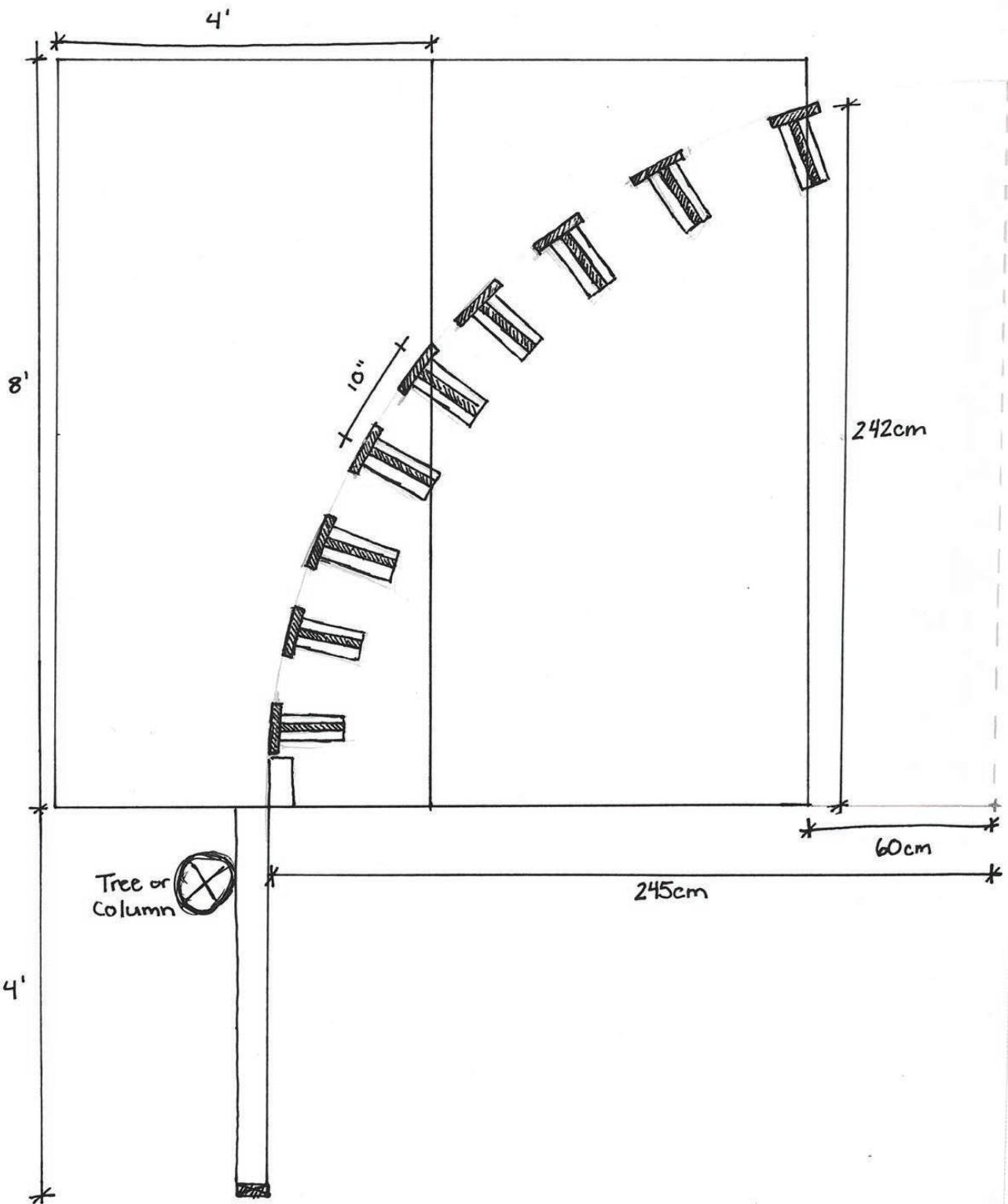
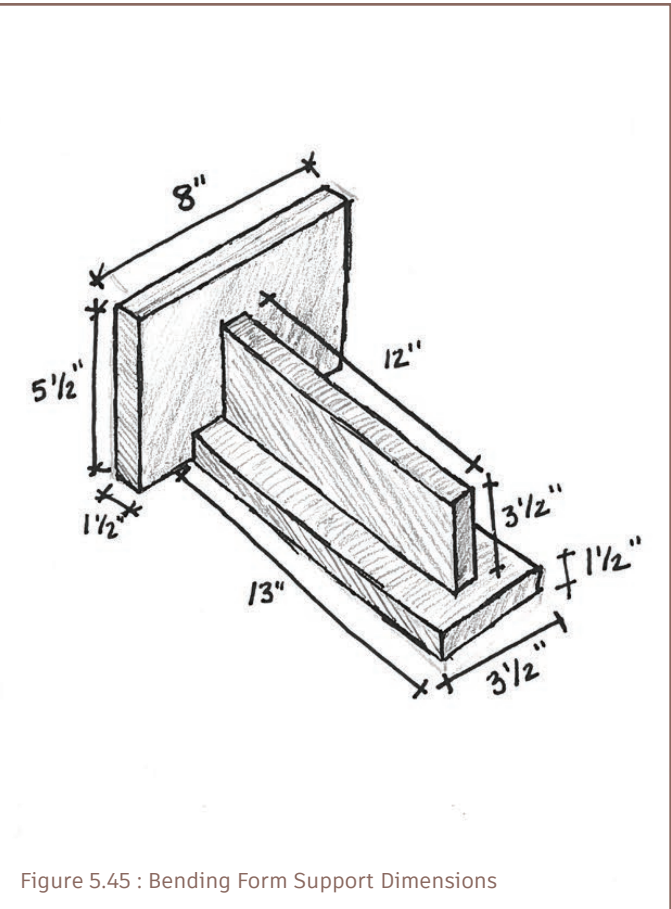
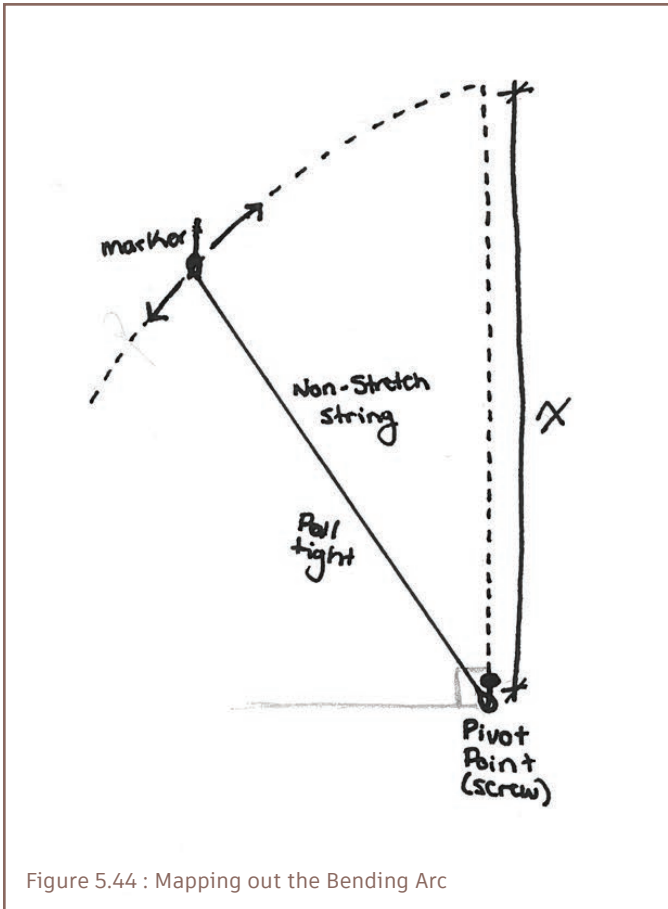


Figure 5.43 : Bending Form Layout





Nban'gaakkonaa

I'm debarking something

Eshkan miiniwaa bagamishtigwaan.

(with a) chisel - and - hammer.

Figure 5.48 : Knot and Edge Removal with Chisel and Mallet



Figure 5.49 : Untouched Knot



Figure 5.50 : Chiselled Knot

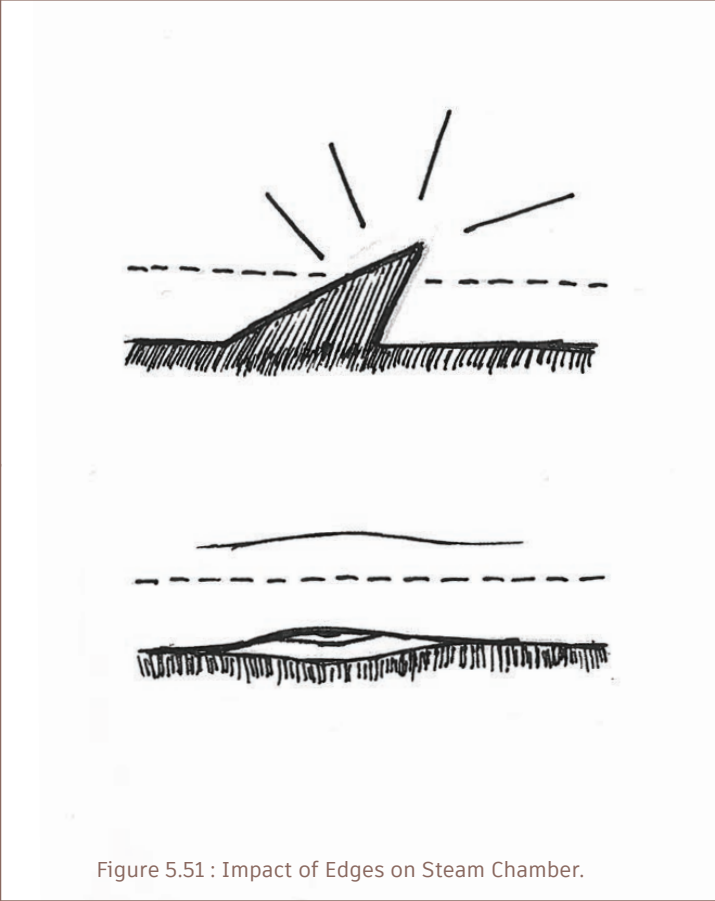


Figure 5.51 : Impact of Edges on Steam Chamber.

Figure 5.52 : Tree Ready for Steaming



Figure 5.53 : Unrolling Vapour Barrier



Figure 5.54 : Measuring Vapour Barrier



Figure 5.55 : Tracing out Vapour Barrier Divisions



Figure 5.56 : Verifying Vapour Barrier Sizing



Figure 5.57 : Cutting Vapour Barrier

Weweni dbizhgen.
measure carefully

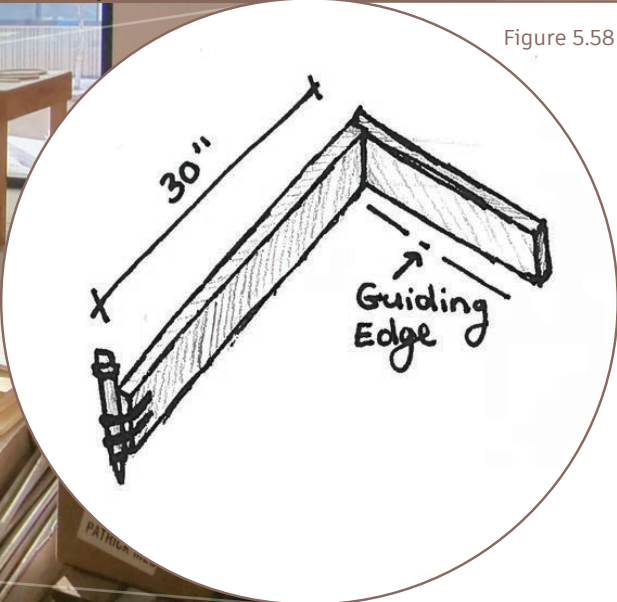


Figure 5.58 : Tracing Tool.

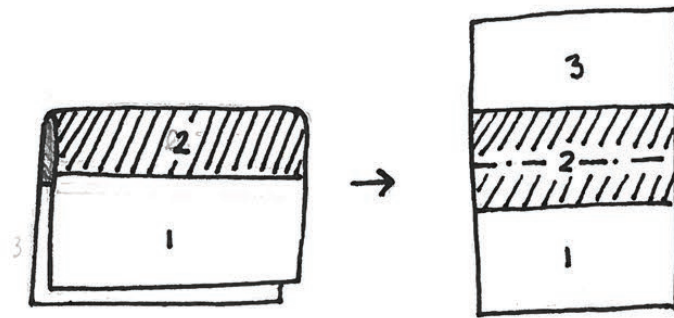


Figure 5.59 : Steam Chambers Acquired From a Single Length of Vapour Barrier

Aabjichganan

tools

zhibii'ganaatik

writing stick

mookomaanens

little knife

dbizhgen

measure

mjikaawanak

gloves



Figure 5.61 : Wrapping the Tree in Plastic



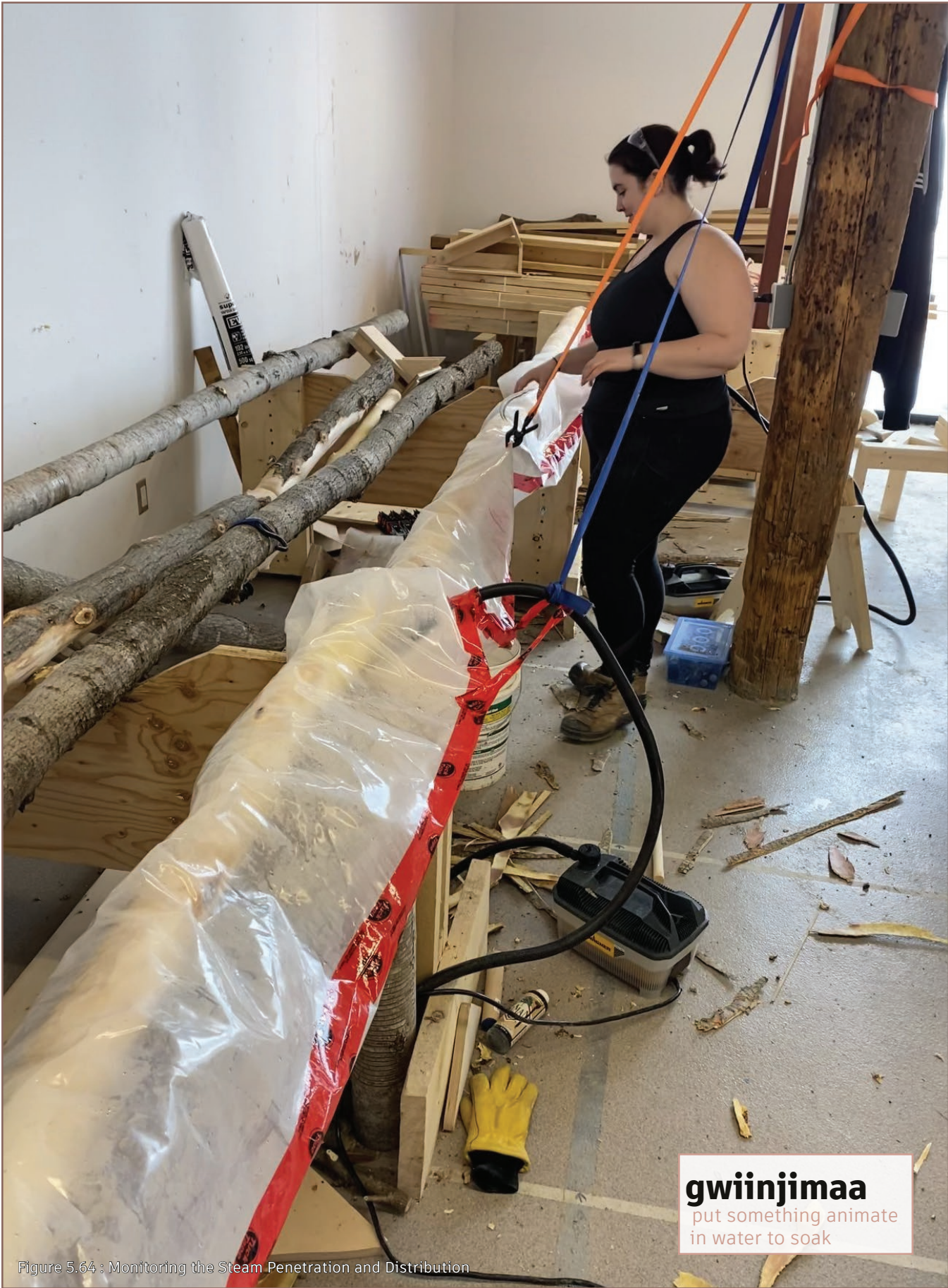
Figure 5.60 : Steaming Tools



Figure 5.62 : Sealing the Plastic Sleeve



Figure 5.63 : Installing the Steam Hoses



gwiinjimaa
put something animate
in water to soak

Figure 5.64 : Monitoring the Steam Penetration and Distribution



ombaabiso
to steam
onzigaazo
be boiled

Figure 5.65 : Tree in Chamber



Figure 5.66 : Pleated and Clamped Chamber to Ensure Steam Circulation



Figure 5.67 : Steaming Tree



Figure 5.68 : 3hrs Timer

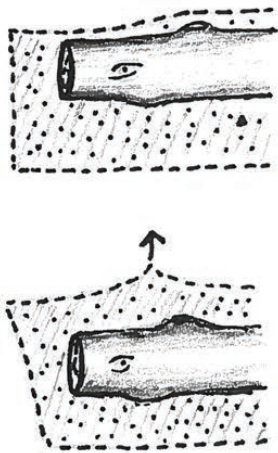


Figure 5.69 : Proper Steam Circulation



Figure 5.70 : Steam Texture



Nban'gaakkonaa
I'm debarking something

Figure 5.71 : Debarking 1



Figure 5.72 : Debarking 2



Figure 5.74 : Stripped Trunk

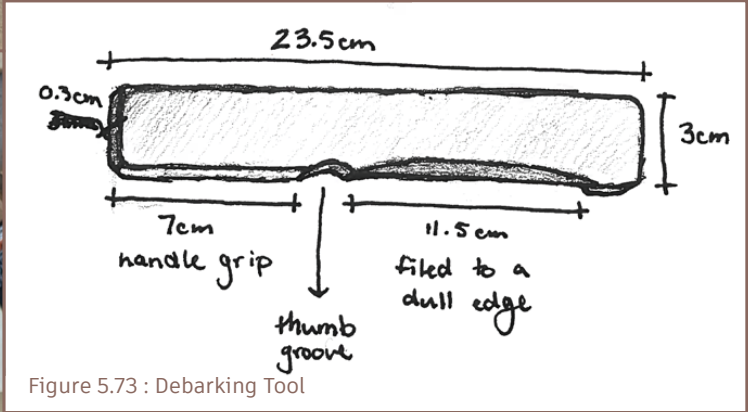


Figure 5.73 : Debarking Tool



Figure 5.75 : Smooth Trunk Finish



Figure 5.76 : Raw Cut Tree Base



Figure 5.77 : Cutting the Tree Base

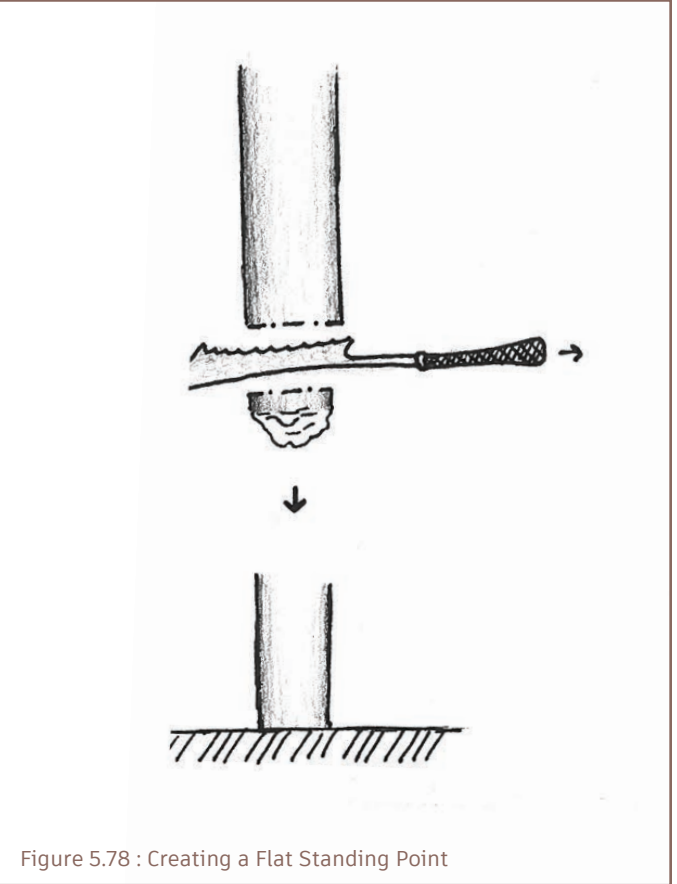


Figure 5.78 : Creating a Flat Standing Point

gwiinjimaa

put something animate
in water to soak



Figure 5.79 : Re-inserting the Tree into the Steam Chamber



Figure 5.80 : 3hrs Timer



Figure 5.81 : Steaming in Process



Aabjichganan
tools



Figure 5.83 : The Big Bending Moment



Figure 5.84 : Piping Hot Tree Transport



Figure 5.85 : Bending 1

Onadin

form/shape/knead/mold a soft substance by hand



Figure 5.86 : Bending 2



Figure 5.87 : Full-Scale Bent Tree in Relation to 1:5 Model



waagizi
to be bent/to be crooked/
to be curved

Figure 5.88 : View of the Full Bend



Figure 5.89 : View from Tree Base to Demonstrate Curve Extent

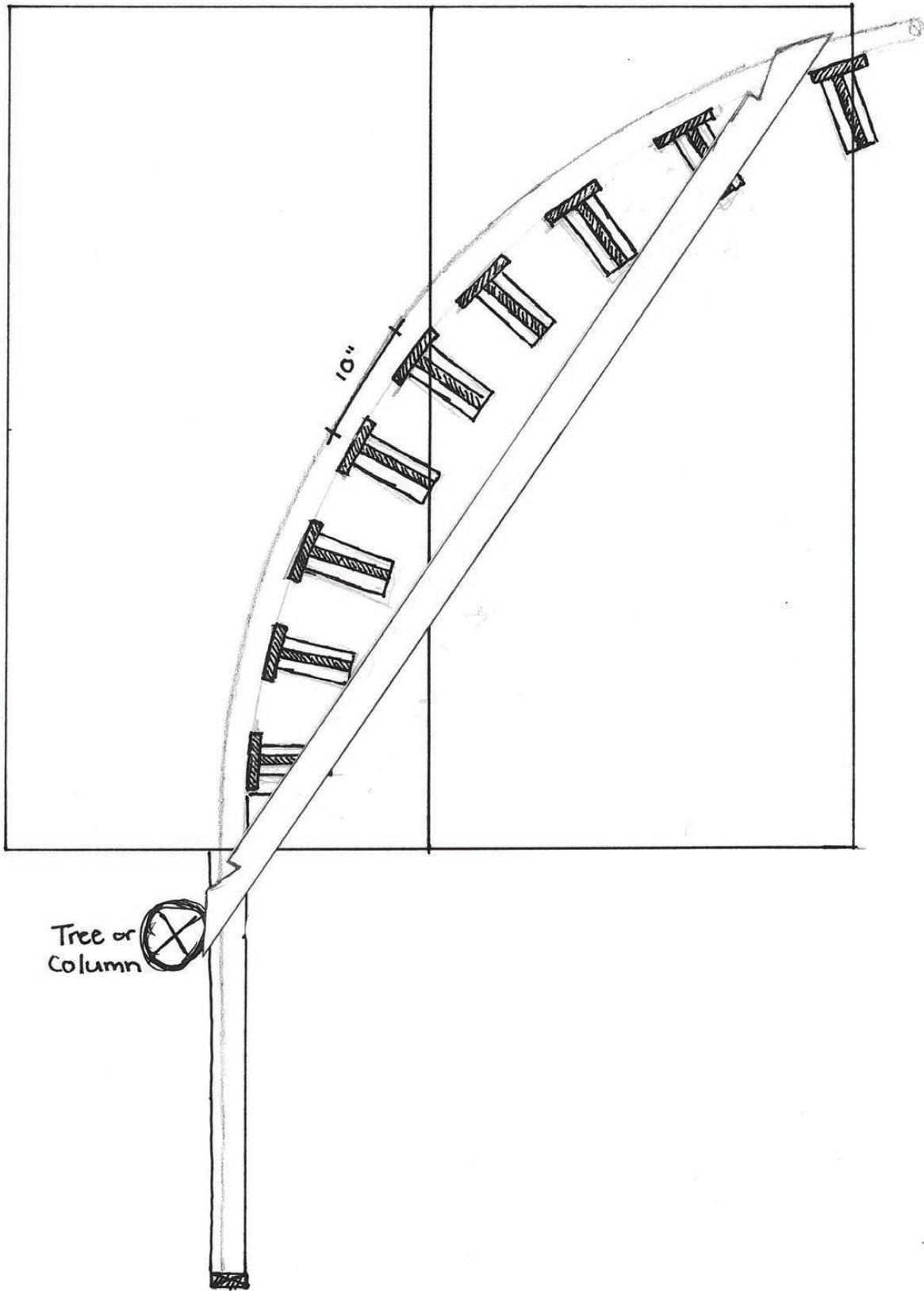


Figure 5.90 : Wood Joinery Locations in Relation to Bending Form

Aabjichganan

Tools / Materials



Figure 5.91 : Wood Joinery Tools

IDEAL RANGE
FOR DOVETAIL

7° - 15°

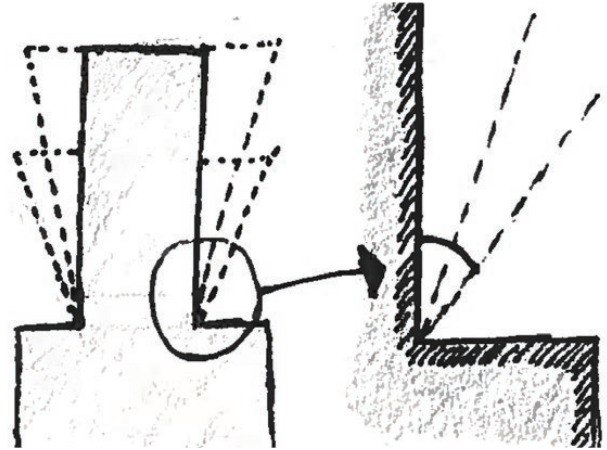


Figure 5.92 : Angle Range for Maximum Dovetail Strength

Weweni dbizhgen.
measure carefully



Figure 5.93 : Aligning the Cross-Member to the Tree

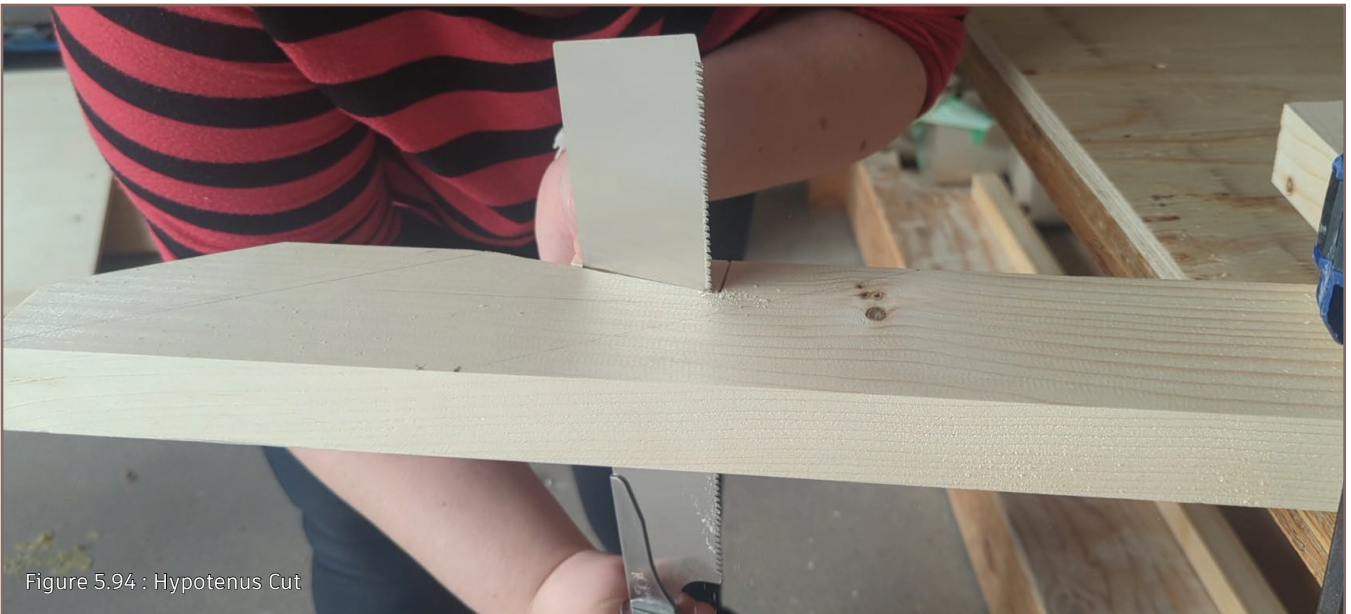


Figure 5.94 : Hypotenuse Cut

Mamizhwi
cut it out or off



Figure 5.95 : Lateral Cut



Figure 5.96 : Marking Desired Lap Joint Depth



Figure 5.97 : Scribing the Trees Rounded Edges



Figure 5.98 : Mapped Cut Lines



Figure 5.99 : Detailed Lapped Dovetail Member



Figure 5.100 : Shaving Results From Carved Joint Above



Figure 5.101 : Creating Tree Lap Joint 1



Figure 5.102 : Creating Tree Lap Joint 2



Figure 5.103 : Creating Tree Lap Joint 3

Weweni dbizhgen.
measure carefully



Figure 5.104 : Test Fitting



Figure 5.105 : Marking Trouble Areas



Figure 5.106 : Carving Minor Revisions

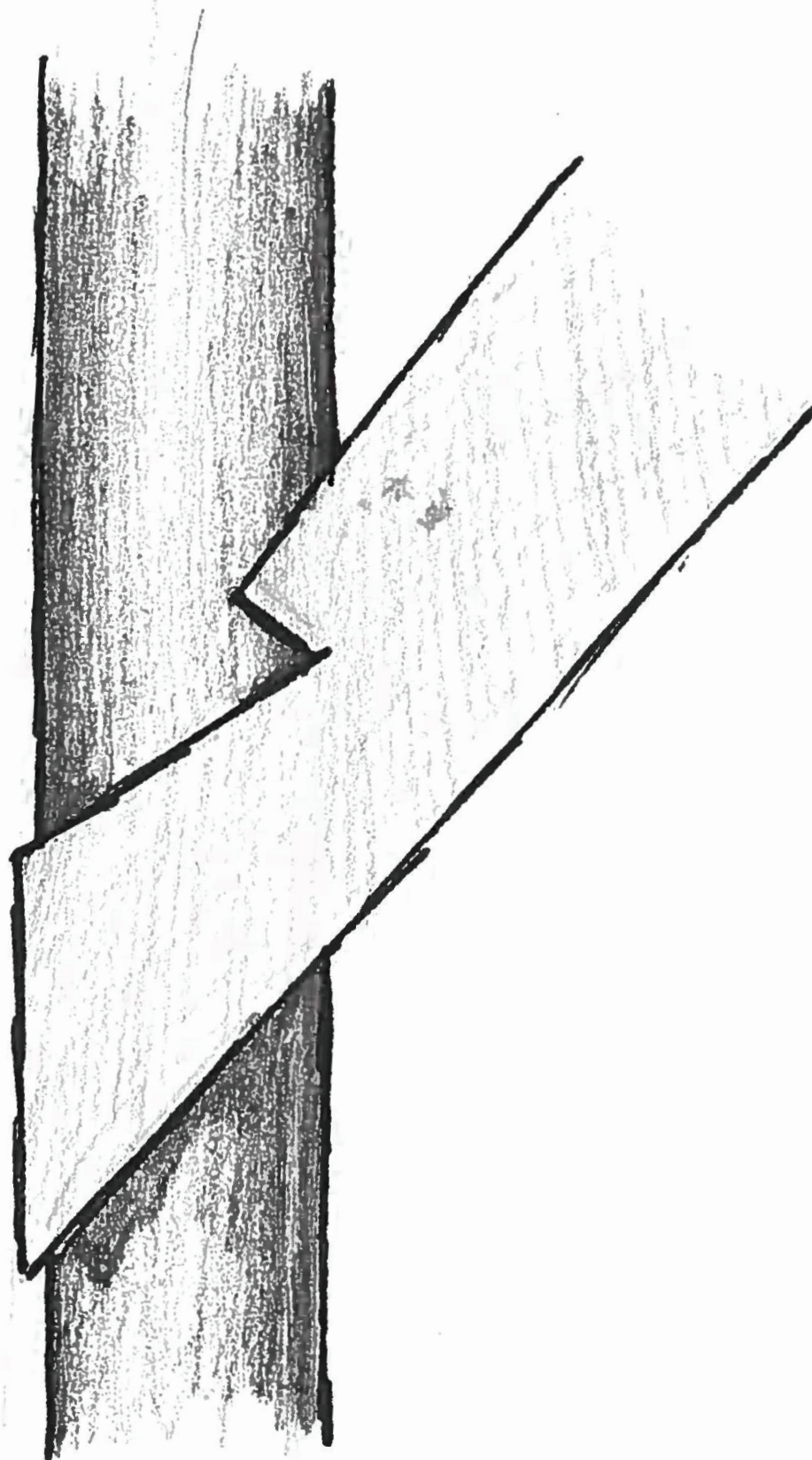


Figure 5.107 : Completed Dovetail Joinery in Place



Figure 5.108 : Positioned Cross-Member



Figure 5.109 : Positioning Cross-Member to Mark Second Joint



Figure 5.110 : Dovetail Cut



Miziniboozh
carve something with a saw

Figure 5.111 : Cleaning the Dovetail Cut



Figure 5.112 : Sawing the Edges to Avoid Unwanted Material Loss



Onikozh
cut it to shape

Figure 5.113 : Slow and Steady Material Removal



Figure 5.114 : Fast and Efficient Material Removal



Figure 5.115 : Starting Tree 2 Lap Joint



Figure 5.116 : Finished Tree 2 Lap Joint



Figure 5.117 : Fitted Tree 2 Dovetail Lap Joint

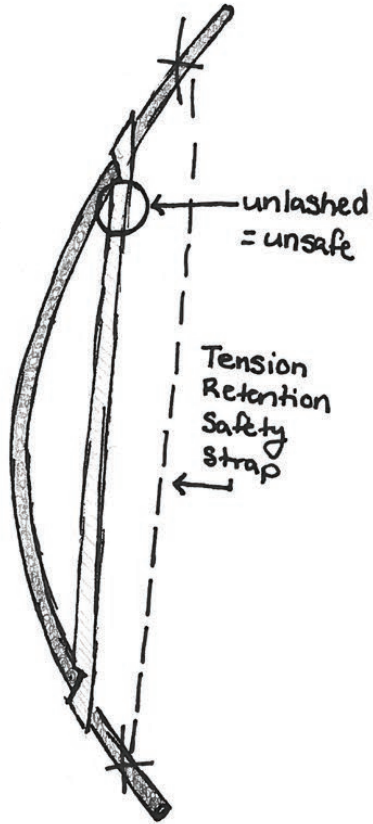


Figure 5.118 : Tension Retention
 BE INCREDIBLY CAREFUL WHEN FLIPPING
 THE TREE. ENSURE THAT THE TENSION
 IS RETAINED AND DOES NOT RELIE ON THE
 UNFINISHED CROSS-MEMBER.

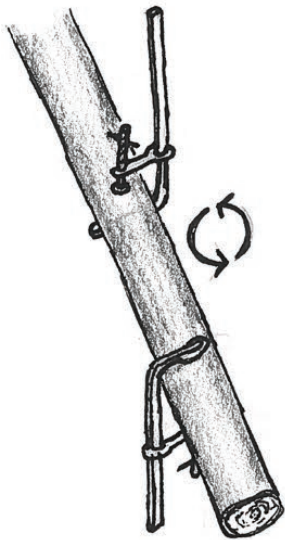


Figure 5.121 : Flip Clamps
 During Flip to Ensure they Sit Flat on the
 Bending Form Bed



Figure 5.119 : Lifting the Tree out of its Form to Flip it



Figure 5.120 : Pivot 1



Figure 5.122 : Pivot 2



Figure 5.123 : Repositioning Tree in Bending Form



Figure 5.124 : Flipped Tree in Bending Form

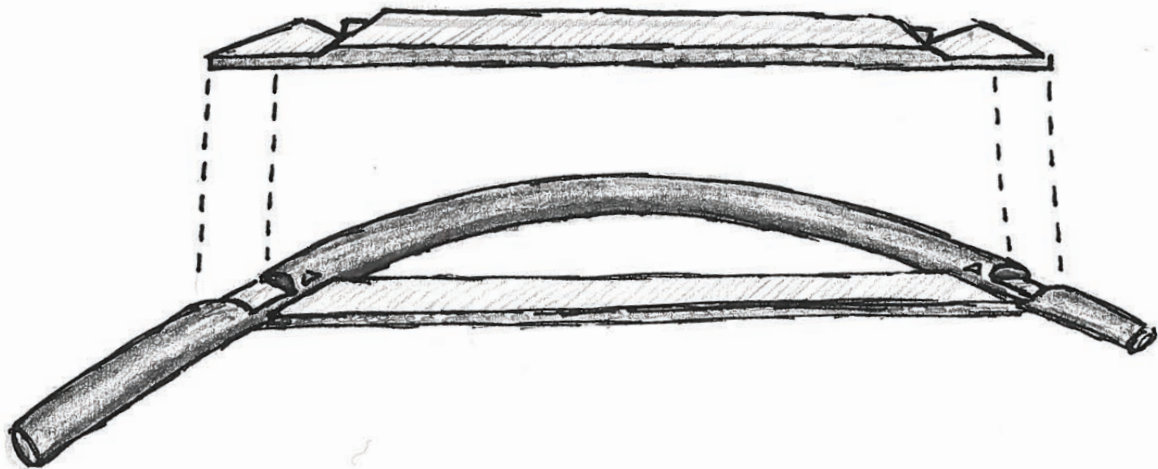


Figure 5.125 : Assembly Sequence for Second Side



Figure 5.126 : Marking Groove Placements

Biindisagiboojige
cut grooves into wood



Figure 5.127 : Cutting Grooves



Figure 5.128 : Notched Grooves for Easy Chiselling



Figure 5.129 : Chiselling Grooves



Figure 5.130 : Chiselling Grooves 2



Figure 5.131 : Completed Grooves



Figure 5.132 : How to Start the Lashing

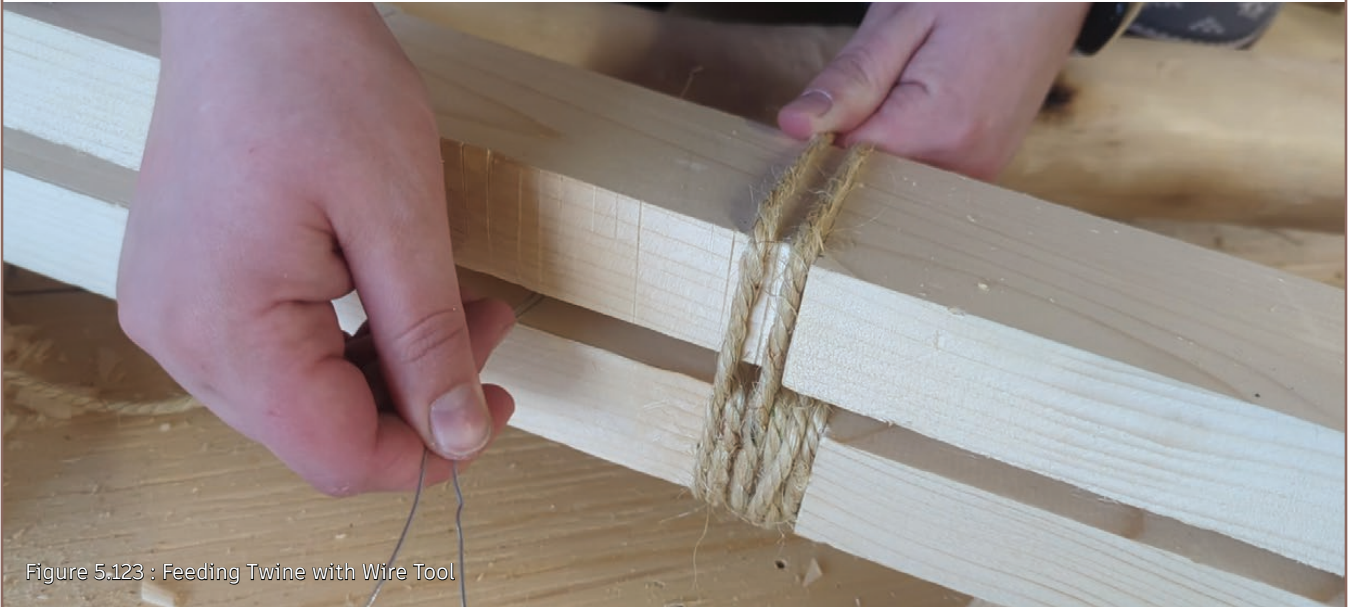


Figure 5.123 : Feeding Twine with Wire Tool



Figure 5.134 : Wire Used to Fish Twine

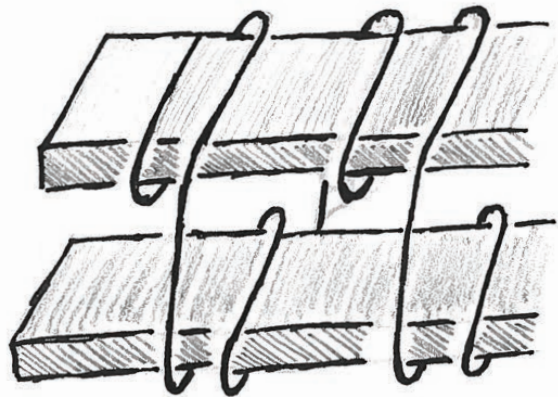


Figure 5.135 : Lashing Pattern



Figure 5.136 : Lashing in Process

Gezibipizo
to be tied up neatly/
be wrapped neatly



Figure 5.137 : Completed Lashing



Figure 5.138 : Lashing Viewed in Bending Form



Figure 5.139 : Identifying the Cutting Angle for a Square Top

N'bimiwinaa

I'm carrying something/I'm transporting something



Figure 5.140 : Moving the Arch from the Woodshop to the Atrium



Giishikonakad
to cut off a tube-like object
Daashkiboojigan
buck-saw/crosscut saw

Figure 5.141 : Cutting Top as Marked



badakishim
to erect/stand a sticklike
object somewhere

Figure 5.142 : Standing up the Arch

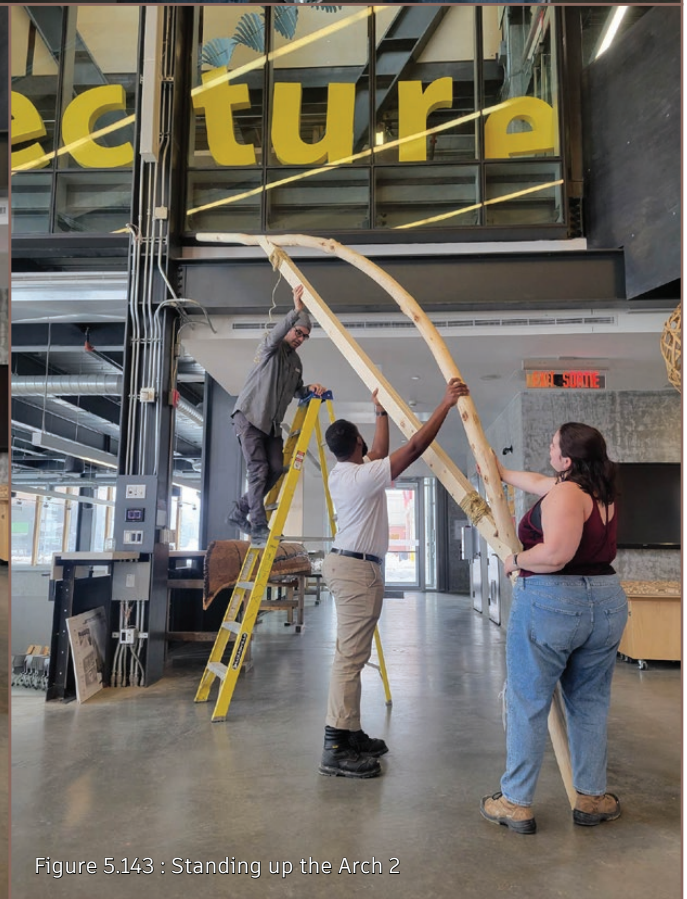


Figure 5.143 : Standing up the Arch 2

Zoongkishin

a sticklike object standing firmly where it's erected



Figure 5.144 : Standing Arch



Figure 5.145 : Carved Teachings - Courage



Figure 5.146 : Carved Teachings - Wisdom



Mamiiziniboozh
to carve a design in something

Figure 5.147 : Carved Teachings - Love



Figure 5.148 : Carved Teachings - Respect



Figure 5.149 : Upper Lashing Connection Detail



Figure 5.150 : Upper Dovetail Connection Detail



Figure 5.151 : Lower Dovetail Connection Detail

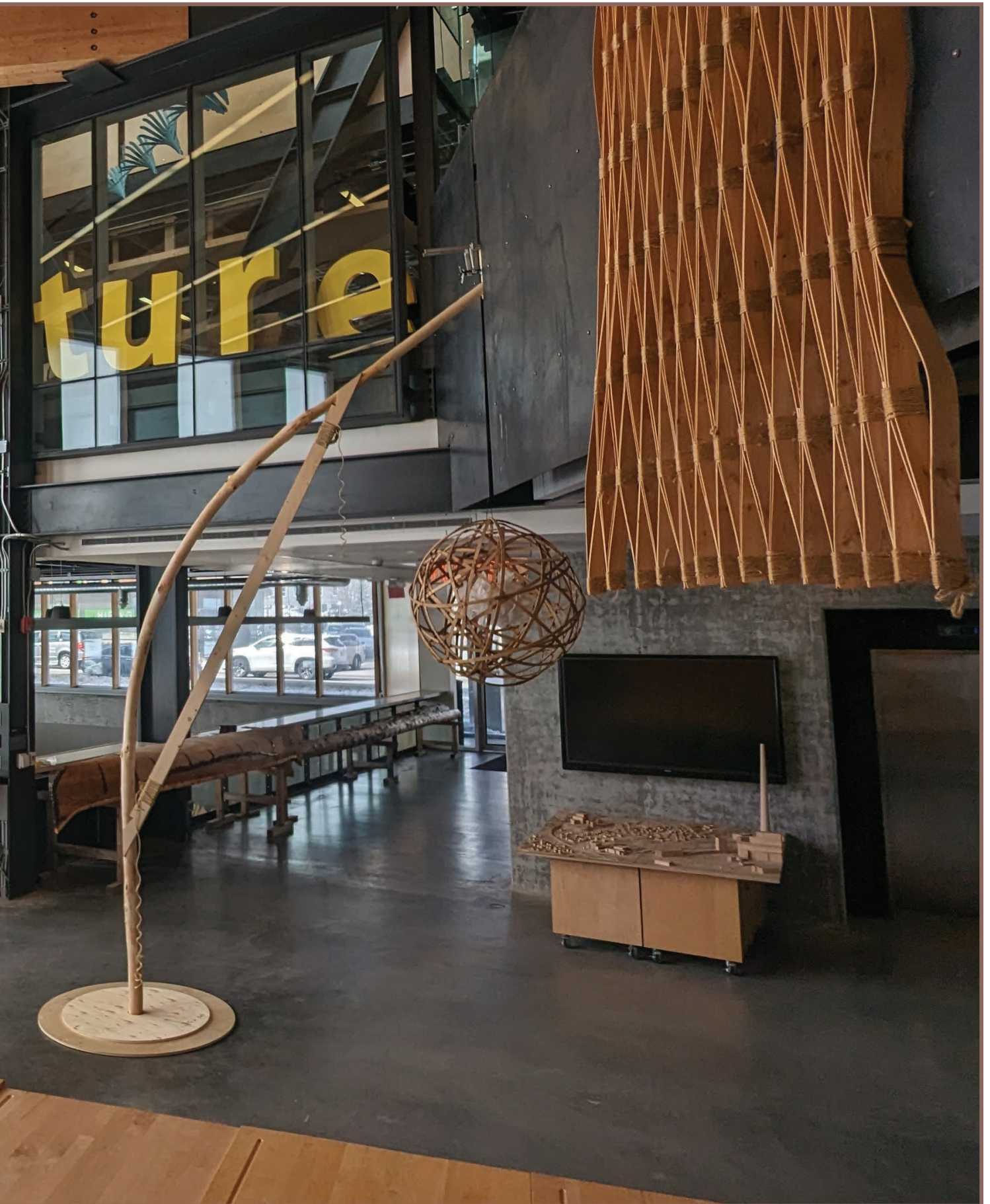


Figure 5.152 : Lower Lashing Connection Detail



Zhibii'ge kinomaagewin mitigoong.
to write teachings on a tree

Figure 5.153 : Full-Scale Arch in Atrium of the McEwen School of Architecture

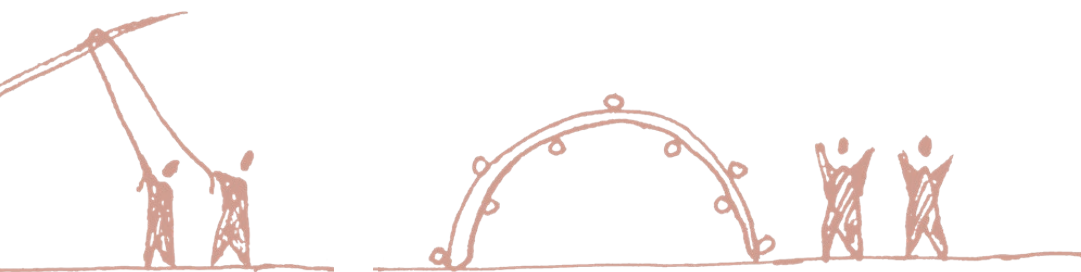


Conclusion



Conclusion

The present body of work argues that architecture and the built environment can play a crucial role in the learning process of language. Conscious, intentional and rooted architectural interventions led by community initiatives can have a positive impact on language learning and the collective identity of a community. By proposing an architectural typology framed around the Ojibwe Language learning initiatives of the Atikameksheng Anishnawbek First Nation, this thesis demonstrates that architecture can contribute more than just the design of spaces. Utilizing architecture and the built environment as a tool, this body of knowledge explores the making process as a designed architectural component. Through community-minded and discussion-based research, this thesis argues the need for action-based Ojibwe Language Learning opportunities in and around the Atikameksheng Anishnawbek First Nation. As a verb-based language deeply rooted in the land and its culture, Ojibwe is not easily taught in a classroom setting. Conversations with key members of the Atikameksheng Anishnawbek First Nation community reveal that grassroots initiatives and culture revitalization strategies are being put into effect by the Chief and Council in and around Atikameksheng's traditional territory to reconnect its community to the land. This body of work proposes that these initiatives and future expansion plans provide the perfect opportunity to mould language learning and traditional teachings into the process of community-specific architectural spaces. Although no closing comments have been presented by community members, the following body of work intends to be shared publicly and made readily available.



Appendices

Appendix A - Ecological Center Case Studies

1. Visitor Center in Skomakerdiket Lake Bergen, Norway



Figure A.0 : Exterior Winter Approach.

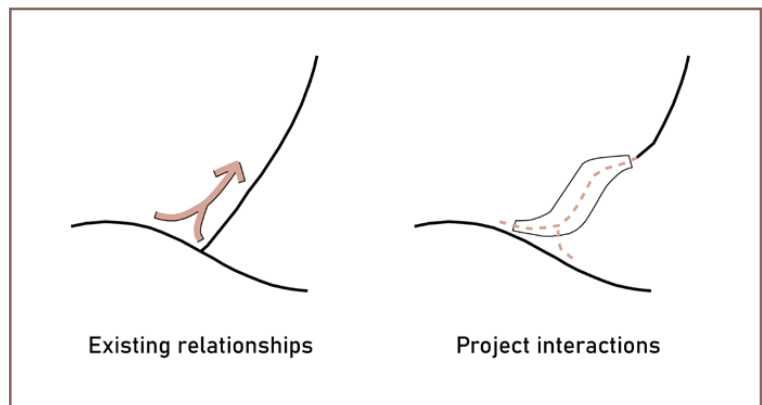


Figure A.1 : Building relation to pathways



Figure A.2 : Exterior Covered Seating.

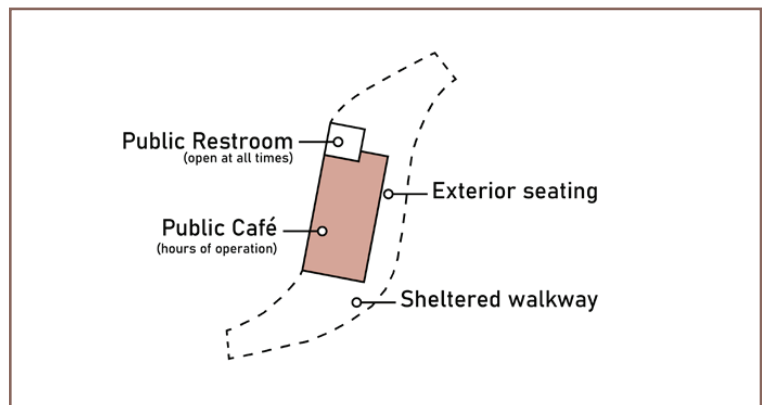


Figure A.3 : Interior and Exterior Spaces



Figure A.4 : Visual Connection to the Outdoors

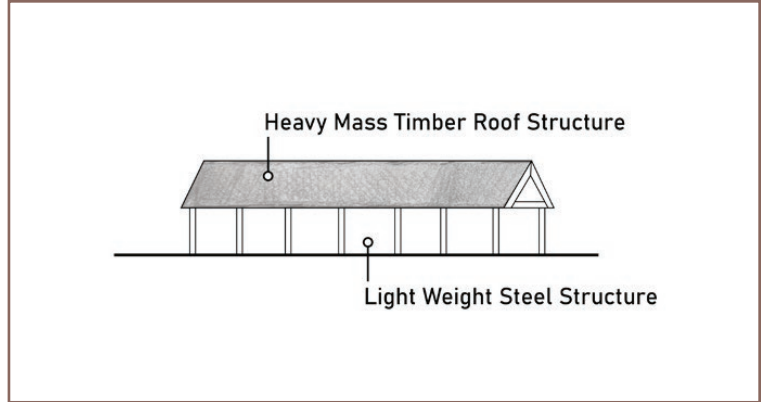


Figure A.5 : Material Experience

2. Westwood Hills Nature Center
St Louis Park, Minesota, USA



Figure A.6 : Exterior Summer Approach

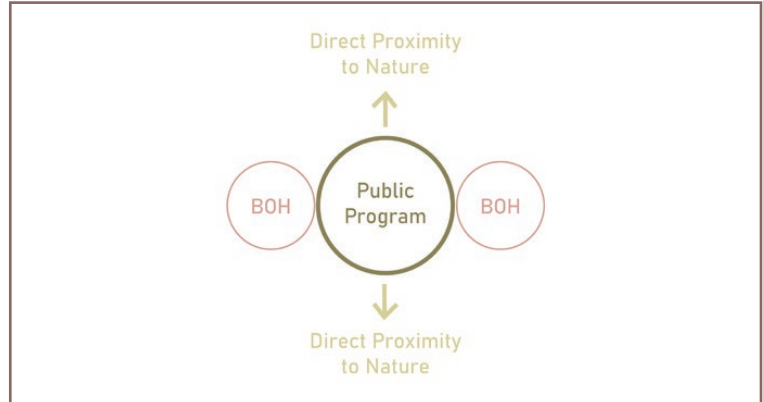


Figure A.7 : Public VS Back of House Spaces



Figure A.8 : Main Public Teaching Space

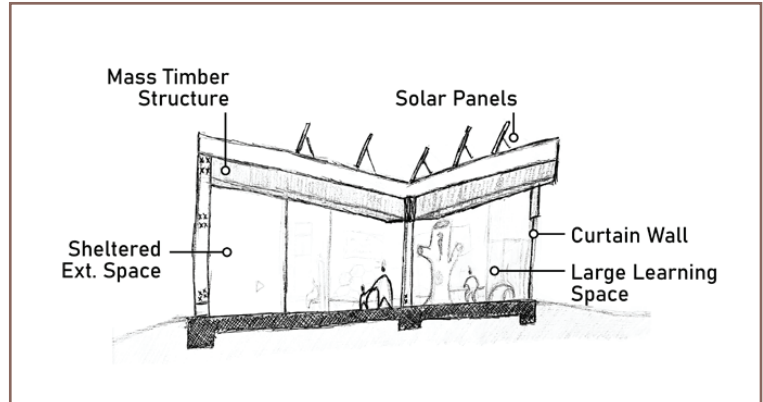


Figure A.9 : Experiential Program Relationships



Figure A.10 : Inhabitable Circulation Space

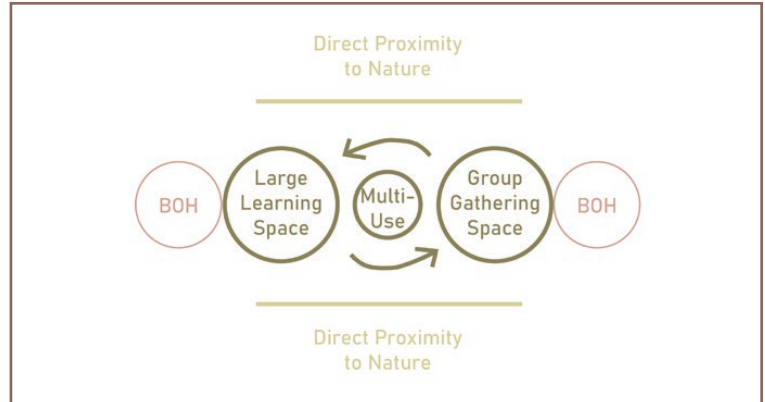


Figure A.11 : Learning Program Relationships

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